U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-285 584

# Draft Environmental Impact Statement Ideal Basic Industries: Cement Plant, Theodore Industrial Park, Alabama and Limestone Quarry, Monroe County, Alabama Summary Document

U.S. Environmental Protection Agency, Atlanta, Ga. Region IV

19 May 78

**BIBLIOGRAPHIC DATA SHEET**

1. Report No. EPA 904/9-78-005

2.

3. Recipient's Accession No. PB285584

4. Title and Subtitle

Draft Environmental Impact Statement
Ideal Basic Industries Cement Plant
Summary Document.

5. Report Date May 19, 1978

6.

7. Author(s) EIS Preparation Section, EIS Branch, EPA RegionIV

8. Performing Organization Rept. No.

9. Performing Organization Name and Address

EIS Branch, EPA Region IV
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Atlanta, GA 30308

10. Project/Task/Work Unit No.

11. Contract/Grant No.

12. Sponsoring Organization Name and Address

Same as box 9

13. Type of Report & Period Covered

Draft EIS

14.

15. Supplementary Notes

16. Abstracts

Ideal Basic Industries proposes to construct a new cement plant in Theodore Industrial Park near Mobile, Alabama and a supporting limestone quarry in Monroe County Near Monroeville, Alabama. This impact statement addresses the existing air quality in Mobile County and Theodore Industrial Park and the natural environment of the proposed quarry sites. Air emissions at the proposed plant site are modeled and their impacts are projected for the area. The impact of constructing an access road across wetlands are discussed. Mitigative measures to reduce these impacts are presented as well as alternative locations.

17. Key Words and Document Analysis. 17a. Descriptors

Cement manufacture
Limestone quarry
Mobile, Alabam
Kiln
Baghouses
wetlands

17b. Identifiers/Open-Ended Terms

17c. COSATI Field/Group

18. Availability Statement

19. Security Class (This Report) UNCLASSIFIED

20. Security Class (This Page UNCLASSIFIED

21. No. of Pages 278

22. Price A13 - A01

FORM NTIS-35 (REV. 10-73) ENDORSED BY ANSI AND UNESCO. THIS FORM MAY BE REPRODUCED USCOMM-DC 8265-P74

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EPA 904/9-78-005
NPDES Application Numbers:
AL0028801, Cement Plant
AL0028819, Limestone Quarry

# DRAFT
# ENVIRONMENTAL IMPACT STATEMENT

for

Proposed Issuance of a New Source National
Pollutant Discharge Elimination System Permit

to

Ideal Basic Industries, Inc.
Cement Plant, Theodore Industrial Park, Alabama
and Limestone Quarry, Monroe County, Alabama

prepared by

U.S. Environmental Protection Agency
Region IV
Atlanta, Georgia 30308

Approved:

John C. White
Regional Administrator

May 19, 1978
Date

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NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

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# SUMMARY SHEET FOR ENVIRONMENTAL IMPACT STATEMENT

## CEMENT PLANT AND LIMESTONE QUARRY
## IDEAL BASIC INDUSTRIES, INC.
## THEODORE INDUSTRIAL PARK AND MONROE COUNTY, ALABAMA

(X) Draft

( ) Final

1. TYPE OF ACTION: Administrative (X) Legislative ( ).

2. DESCRIPTION OF ACTION:

The Environmental Impact Statement (EIS) was prepared by the Region IV office of the Environmental Protection Agency (EPA). EPA has prepared this document to fulfill the requirements of the National Environmental Policy Act of 1969 (NEPA) and the EPA January 11, 1977 regulations: Preparation of Environmental Impact Statements for New Source NPDES Permits (42 CFR 6.900). NEPA requires all Federal agencies to assess the impacts which would occur following a major Federal action which will result in a significant impact on the human environment.

Ideal Cement Company, a division of Ideal Basic Industries, Inc. (the applicant), has proposed to construct and operate a new 1.4 million metric ton (1.5 million ton) per year portland cement plant and supplemental limestone quarry. The cement plant will be located in the Theodore Industrial Park along the federally-authorized Theodore Ship Channel. The limestone quarry site will be located near Monroeville in Monroe County, Alabama, bordering the Alabama River.

The proposed plant site will involve the clearing of approximately 20 hectares (50 acres) of the 71-hectare (175-acre) tract owned by the applicant. When completed, the plant site will consist of a docking facility with loading and unloading equipment, grinding mills, kilns, storage and mixing silos, an aboveground fuel oil storage tank, underground diesel and gasoline tanks, and raw material storage piles.

The quarry site consists of 1,633 hectares (4,035 acres) of modified timberland which is currently being converted to pastureland. Approximately 40 hectares (100 acres) will be cleared and graded for the access road, main building, and stockpile area. An estimated 14 hectares (35 acres) of the quarry property will be impacted during each year of operation. As the quarrying progresses, the overburden removed will be used for reclamation of the quarried areas no longer in production. Over the projected 50-year life of the quarry, approximately 80 percent of the area will be impacted by quarrying. Facilities to be constructed at the quarry site will be the barge docking and loading facility, clarification basins, limestone storage piles, an office and maintenance shop, a well and pump house for potable water, a septic tank and drainfield, and underground diesel fuel and gasoline tanks.

No construction has commenced, pending issuance of the EPA's NPDES Permit, EPA's Authority to Construct (EPA Regulations for the Prevention of Significant Deterioration of Air Quality, 40 CFR 52.21), the Corps of Engineers' Section 10 and Section 404 Construction Permit, and the necessary state approval certificates and permits.

## 3. MAJOR ENVIRONMENTAL IMPACTS

### (A) CONSTRUCTION

### Plant

The plant site is undeveloped land within the Theodore Industrial Park. Site construction will employ an average of 360 workers, with a peak of 700 workers. A short-term increase in air pollution, especially fugitive dust, is expected on and near the plant site. Pollutants in the form of suspended solids from site preparation runoff and construction of the access road and railroad corridor on the property will drain to the barge canal and the North Fork Deer River. Some regrowth vegetation following recent timber harvest will be removed, which will alter existing wildlife habitat. Increased noise in the vicinity of the proposed plant site will result from site construction and increased vehicular use of roadways.

### Quarry

Construction of the quarry site will commit an estimated 80 percent of the 1,633 hectares (4,035 acres) of company-owned and leased property to limestone production. Construction will employ an average of 133 workers for 18 months, with a peak labor force of 250 workers. Fugitive dust is expected on and near the quarry site during construction. Noise generated by earthmoving equipment and construction of the docking facility will have minimal impacts. Impacts from removal of vegetation and alteration of wildlife habitat will be of low magnitude since much of the timber has been harvested for conversion of the area to pastureland. Stormwater runoff may increase suspended solids levels in some on-site creeks and the Alabama River.

Construction of the cement plant and limestone quarry will have positive impacts on the economy in the Mobile area and in Monroe County. These impacts will be of moderate significance. All adverse impacts resulting from construction of the cement plant and quarry will be of moderate to low magnitude and significance.

### (B) OPERATION

Plant

Operation impacts will be long-term, i.e., occurring throughout the life of the proposed cement plant (about 50 years). Impacts to air quality will be increased levels of sulfur dioxide, nitrogen oxides, and particulate matter. EPA has determined that the operation of the cement plant will not cause a violation of the applicable air quality standards. However, the available deterioration increments will be reduced for other new source industries which will build in certain limited areas of Theodore Industrial Park. Wastewater discharges to the Theodore Ship Channel will be limited to overflow from a settling basin collecting limestone and clay storage pile runoff, cooling tower blowdown, truck and process area wash water, and oil tank stormwater runoff. Rainfall runoff from the remainder of the plant site will be directed to a catchment area which will discharge into the freshwater wetlands north of the plant site. These discharges are considered of low magnitude and significance. EPA's preliminary determination is that the discharges will comply with applicable water quality standards. Solid wastes will be disposed in state-permitted sanitary landfills. Noise impacts from plant operation will be of moderate magnitude and low significance to the surrounding area.

Quarry

The major impact from operation of the limestone quarry will be the constant change in topographic features over the projected 50-year life of the quarry. Approximately 14 hectares (35 acres) will be quarried and a comparable area reclaimed each year. Reclamation of the limestone quarry will replace the overburden in a manner which will provide for drainage and permit reseeding to grass and return to pastureland. Clarification basins designed to collect runoff from the quarry operation will discharge water to the Alabama River and the creeks on the quarry property. EPA's preliminary determination is that these discharges will comply with applicable water quality standards and will be of low significance. Fugitive dust will be generated from quarry operations but will be controlled by watering and will normally be confined within the limits of the active quarry area. Noise from the quarry operation will not adversely impact residences. Transport of the limestone will increase barge traffic on the Alabama River.

Adverse impacts from operation of the cement plant and limestone quarry will be of low to moderate magnitude with low significance. Beneficial impacts to the economy in the Mobile area and in Monroe County, including supporting services, will result from operation of the cement plant and limestone quarry. These impacts will be of moderate to high magnitude and of moderate significance.

## 4. ALTERNATIVES TO THE PROPOSED ACTION

### (A) PLANT

Twenty-seven alternative plant sites were considered for locating the cement plant. The selected site is in an industrial park designated by the State of Alabama and Mobile County to be used for industrial development.

The alternatives for the manufacture of cement are the wet process and the dry process. The dry process was selected mainly due to lower energy requirements and possibly lower maintenance costs. Alternative raw materials considered for the calcium supply were dolomite from the proposed Gaillard quarry site and several other sources, aragonite from the Bahamas, and oyster shells from the Gulf Coast area. Oil and natural gas were considered as alternative fuels to operate the plant.

Alternatives considered for solid waste disposal were use of county-maintained sanitary landfills and on-site burial.

Alternative air pollution abatement devices considered for control of particulate emissions were baghouses, electrostatic precipitators, scrubbers, and multicyclones. Water sprays and enclosing/venting to a baghouse were the alternatives considered for fugitive dust control.

Alternative treatment and discharge of process-related wastewaters and stormwater runoff from the plant were considered. The alternatives were to direct wastewater discharges to the wetlands north of the plant, to direct these discharges to the proposed ship channel, or to use the proposed wastewater pipeline to Mobile Bay. Alternatives considered for the general stormwater runoff were to discharge to the wetlands, to the proposed ship channel, or partially to both the wetlands and the ship channel. Alternative access corridors considered were from the north across the North Fork Deer River through the wetlands, and bridging the entire wetland area, and from Dauphin Island Parkway on the east.

### (B) QUARRY

Alternative air pollution abatement devices considered for control of particulate emissions were water sprays and enclosures with baghouses. Solid waste alternatives considered were burning, chipping, on-site landfilling, and use of Monroe County Landfill.

Alternatives for controlling wastewater discharges considered were clarification basins, vegetative buffers, and quarry pit storage. Alternatives for reclamation of quarry lands were pastureland, timberland, and industrial development.

## 5. FEDERAL, STATE AND LOCAL AGENCIES AND INTERESTED GROUPS REQUESTED TO COMMENT

### FEDERAL AGENCIES

Bureau of Outdoor Recreation
U.S. Coast Guard
Corps of Engineers
Department of Commerce
Department of Energy
Department of Health, Education and Welfare
Department of Interior
Department of Transportation
Department of Housing and Urban Development
Economic Development Administration
Federal Highway Administration
Fish and Wildlife Service
Food and Drug Administration
Forest Service
Geological Survey
National Park Service
Office of Federal Activities
Soil Conservation Service

### MEMBERS OF CONGRESS

Honorable John J. Sparkman, United States Senate
Honorable James B. Allen, United States Senate
Honorable Jack Edwards, United States House of Representatives

## STATE AGENCIES

Alabama Air Pollution Control Commission
Alabama Department of Conservation and Natural Resources
Alabama Forestry Commission
Alabama Water Improvement Commission
Alabama State Docks Department
Alabama State Highway Department
Bureau of Environmental Health

## STATE OFFICIALS

Honorable George Wallace, Governor of Alabama
L.D. Owens, Alabama State Senator
Mike Perloff, Alabama State Senator
L.W. Noonan, Alabama State Senator
Bill Roberts, Alabama State Senator
John McMillan, Alabama State Representative
J. Henry McCulley, Alabama State Representative
Dal C. Younce, Alabama State Representative
Cain J. Kennedy, Alabama State Representative
James E. Buskey, Alabama State Representative
J. Tommy Sandusky, Alabama State Representative
H.L. Callahan, Alabama State Representative
Nat Sonnier, Alabama State Representative
Gary Cooper, Alabama State Representative
Doug Johnstone, Alabama State Representative
Bob Glass, Alabama State Representative

## LOCAL AGENCIES

Mobile City Commission
Mobile County Commission
Board of Water and Sewer Commissioners of the City of Mobile
Mobile County Board of Health
South Alabama Regional Planning Commission

## INTERESTED GROUPS AND INDIVIDUALS

Alabama Bass Chapter Federation
Alabama Conservancy, South Alabama Representative
Alabama Environmental Council
Alabama Federation of Women's Clubs
Alabama Ornithological Society
Alabama Wildlife Federation
Baldwin County Wildlife and Conservation Association
Bon Secour Fisheries, Inc.
Coastal Area Board
Ducks Unlimited
League of Women Voters, Baldwin Chapter
League of Women Voters, Mobile Chapter
Marine Environmental Science Consortium
Mobile Area Chamber of Commerce
Mobile Bass Masters Club
Mobile Bay Audubon Society
Mobile County Wildlife and Conservation Association
Mobile United
Save Our Bay Club
Sierra Club
South Alabama Seafood Processors
Wildlife Management Institute

6. This draft EIS was made available to the Office of Federal Activities (OFA) and the public on May 19, 1978.

## INTRODUCTION

### PROJECT BACKGROUND

Ideal Basic Cement Division of Ideal Basic Industries, Incorporated, of Denver, Colorado, plans to construct and operate a cement manufacturing facility near Mobile, Alabama, and a limestone quarry near Monroeville, Alabama (see Figure 1). The cement plant will use limestone from the quarry as its principal raw material. The plant and quarry water discharges, which are described in the Water Resources/Geotechnical sections of this document, will be subject to the National Pollutant Discharge Elimination System (NPDES) new source effluent limitations and permit requirements. As a prerequisite to granting the required new source NPDES permits, the U.S. Environmental Protection Agency (EPA) is required by the National Environmental Policy Act of 1969 (NEPA) to evaluate all potential environmental impacts of the proposed project. In order to fulfill NEPA requirements, this Draft Environmental Impact Statement (DEIS) has been prepared and will be reviewed by other local, state, and federal agencies, and by concerned individuals and public interest groups. During the public comment period and at the public hearing, comments on the environmental effects of these two facilities and on EPA's action of issuing the NPDES permits will be received. A Final Environmental Impact Statement (FEIS) will respond to these comments and present EPA's decision on the issuance of the permits for the proposed project.

This Draft Environmental Impact Statement deals with expected significant effects of the construction and operation of the proposed facilities on the natural and social environment. The EIS also considers:

1. Practical alternatives to the proposed projects;
2. Adverse environmental impacts of the proposed projects; and
3. Possible mitigating actions that could be taken to lessen these adverse impacts.

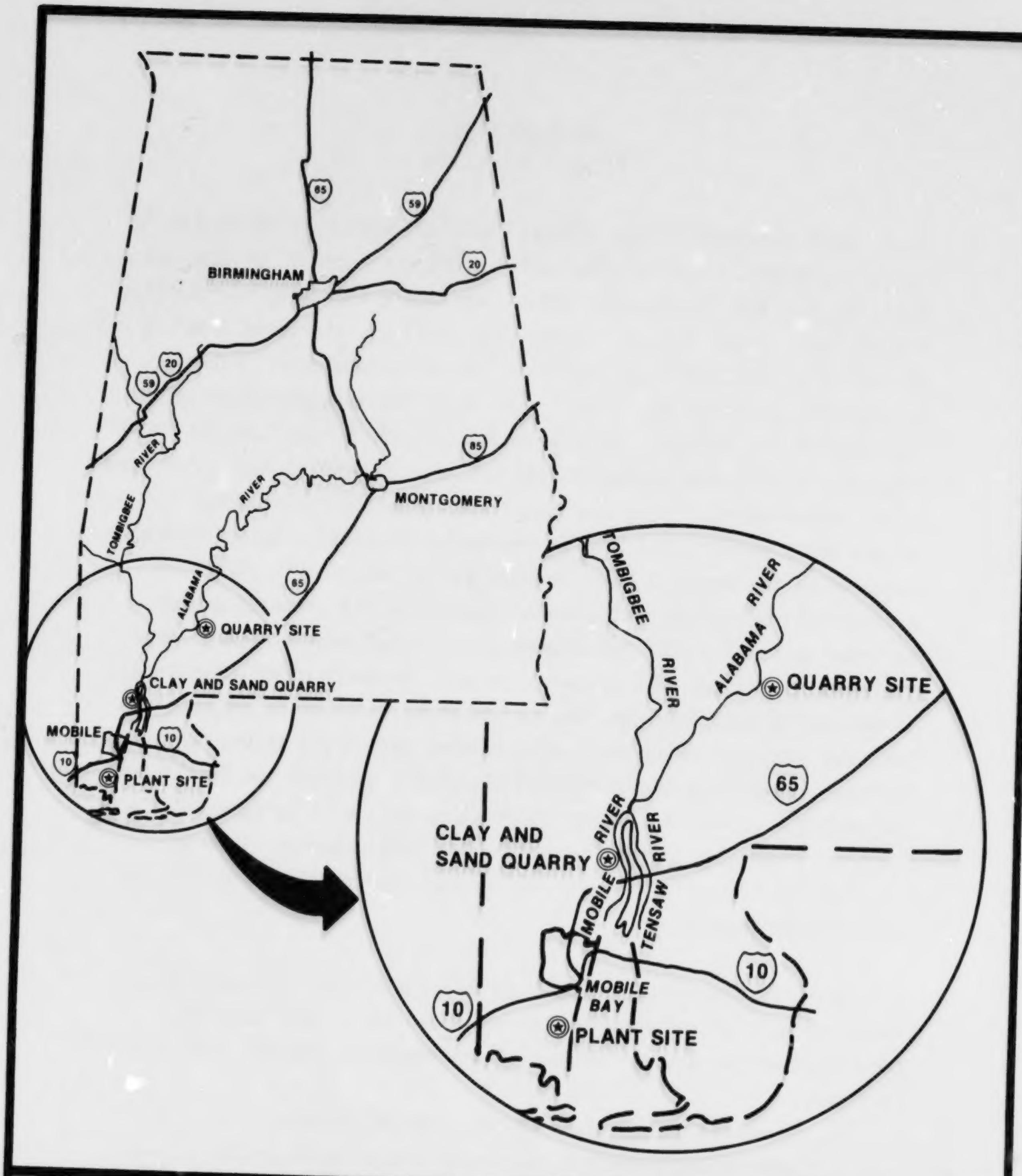
BIRMINGHAM
MONTGOMERY
65
59
20
85
10
TOMBIGBEE RIVER
ALABAMA RIVER
QUARRY SITE
CLAY AND SAND QUARRY
MOBILE
PLANT SITE
MOBILE RIVER
TENSAW RIVER
MOBILE BAY
0 40 80
SCALE IN KILOMETERS
N

Figure 1
PROPOSED CEMENT PLANT AND QUARRY SITES
(EXISTING CLAY AND SAND QUARRY ALSO SHOWN)

SOURCE: Environmental Science and Engineering, Inc., 1977.

REGION IV
U.S. ENVIRONMENTAL PROTECTION AGENCY ENVIRONMENTAL IMPACT STATEMENT FOR IDEAL BASIC INDUSTRIES

PROPOSED CEMENT MANUFACTURING PLANT THEODORE INDUSTRIAL PARK AND PROPOSED GAILLARD QUARRY

In order to expedite the preparation of the Environmental Impact Statement, Ideal Basic Industries has chosen the option of entering into a third-party arrangement with an independent consultant to prepare the DEIS under EPA supervision. EPA approved the consultant selected and has retained sole responsibility for the technical content and environmental assessments contained in the document. Environmental Science and Engineering, Inc., of Gainesville, Florida has served as the third party consultant.

The DEIS has been prepared before detailed plans for the proposed Ideal Basic Industries project have been finalized in order to be responsive to the comparative evaluation of possible alternatives and mitigating measures. The description of the proposed project incorporates the information available at the present time, and the assessment deals with the worst-case condition in terms of environmental impact. No future alterations will be incorporated in the project unless they involve either improvement or no significant change in environmental quality.

This summary document presents in abbreviated form sufficient information for understanding all significant project impacts. Most of the discussion is organized according to environmental disciplines (e.g., air, water resources, ecology) in order to permit a cohesive treatment of each area of impacts. For every discipline there is discussion of baseline environmental conditions; relevant project actions, including environmental safeguards to be taken by Ideal Basic Industries; environmental impacts (positive and negative); possible mitigative measures for some negative impacts; and practical project alternatives. More detailed information is provided in the technical support documents which contain the following information:

Appendix A (Volume I), Project Description--A description of the proposed project with detailed information on air, noise, solid wastes, water usage, wastewater discharges, and socioeconomic factors.

Appendix B (Volumes II and III), Baseline--A report of the findings of an intensive data survey of the existing (1977) environmental and socioeconomic conditions at both sites. In addition, future conditions (1992) without the proposed project are projected. This appendix covers the following discipline areas: Climatology and Meteorology, Air Quality, Noise, Solid Waste, Geotechnical, Water Resources, Archaeology, Ecology, and Socioeconomics.

Appendix C (Volume IV), Impacts--An assessment of the expected positive and negative impacts of the proposed projects relative to the baseline conditions. Each impact is rated according to magnitude, significance, duration (long- or short-term), reversibility, and avoidability.

Appendix D (Volume IV), Mitigating Measures--An analysis of the possible actions that could be taken by Ideal Basic Industries to lessen the effects of the adverse impacts.

Appendix E (Volume IV), Alternatives--An environmental assessment of the practical alternative actions which could be taken in place of the proposed actions. The proposed project is reviewed according to the no-action alternative (project not allowed), as well as the site location, process and resource, and pollution abatement alternatives. The rationale for selection of the specific project action over the possible alternatives is given.

The figures used in all documents (summary and technical support) are given in both metric and English units for easier review. The English units are given in parentheses.

The impacts, mitigating measures, and alternatives are summarized in the next section to give the reader a quick overview of the project. The draft NPDES permits and other federal and state agency approvals and notices currently available are presented in the Permit and Approval section of this document.

The bibliography for the Summary Document and all the appendices is presented at the end of this document.

## SUMMARY OF THE ENVIRONMENTAL ASSESSMENT

The proposed project of constructing and operating a cement plant and limestone quarry has been investigated in relation to adverse impacts, possible mitigating actions, and practical alternatives. The significant aspects of these three factors are summarized in Table 1. In order to better understand the assessment methodology, a brief review is presented in the following paragraphs.

Impacts, which are classified as either primary (direct) effects of the proposed action or secondary (indirect) effects, are rated according to:

1. Magnitude--a quantification based on some measurable physical property, assessed in degrees of low, moderate, or high.
2. Significance--a consideration of the importance of the magnitude, duration, and reversibility of the impact relative to expected area conditions. Significance is assessed in terms of low, moderate, or high.
3. Duration--persistency of the impact, assessed as long-term (greater than several years) or short-term (less than several years).
4. Reversibility--rates the ability of the environment to naturally return to existing conditions without a major direct action of man. Impacts are rated as either reversible or irreversible.
5. Avoidability--assesses the possibility of an adverse impact being completely eliminated by some alternative action. The effects are rated as avoidable and unavoidable.

Mitigating actions are possible measures that could be taken by the applicant to reduce adverse impacts. These measures could be performed in addition to the proposed action and environmental safeguards. (Environmental safeguards are those actions taken by the applicant specifically to lessen potential effects of their project and are considered in assessing the expected adverse impacts.)

Table 1. Summary of Significant Adverse Environmental Impacts, Proposed Mitigating Measures, and Practical Alternatives

| Action | Phase* | Magni- tude | Signi- ficance | Revers- ible | Dura- tion (Term) | Avoid- able | Mitigating Measures | Alternatives |
|---|---|---|---|---|---|---|---|---|
| PLANT SITE<br>Air Quality | | | | | | | | |
| 1. Controlled Burning of Land-Clearing Wastes | C | Low | Low | Yes | Short | Yes | None | On-site burial; fire-wood; use in pulp mills and waste wood boilers |
| 2. Fugitive Dust | C | Mod | Low | Yes | Short | No | Chemical stabilizers; wind breaks; paving roads | None |
| 3. Particulate Emissions | 0 | Low | Low | Yes | Long | No | Higher stack heights | Scrubbers; cyclones; electrostatic precipitators; enclosing fugitive dust sources and venting to baghouses |
| 4. Sulfur Dioxide Emissions | 0 | Low | Low | Yes | Long | No | Lower sulfur fuel | None |
| 5. Nitrogen Oxide Emissions | 0 | Low | Low | Yes | Long | No | None | None |
| 6. Use of PSD Increment | 0 | Mod | Low | Yes | Long | No | None | None |
| Noise | | | | | | | | |
| 1. Construction Activities | C | Mod | Low | Yes | Short | No | None | None |
| 2. Plant Operations | 0 | Mod | Low | Yes | Long | No | Noise suppression on baghouse fans; enclose facilities | Change facility layout to minimize noise impact |
| Solid Wastes | | | | | | | | |
| 1. Landfilling | C | Low | Low | Yes | Long | No | None | On-site burial |
| 2. Disposal of Dredged Material | C | Mod | Low | No | Long | No | None | None |
| 3. Landfilling | 0 | Low | Low | Yes | Long | No | None | On-site burial; use as fill |
| Socioeconomics | | | | | | | | |
| 1. Traffic | C | Mod | Low | Yes | Short | No | Reschedule work shifts | None |
| 2. Land Value | C | Mod | Low | Yes | Short | No | None | None |
| 3. Truck Traffic | 0 | Mod | Low | Yes | Long | No | Reschedule truck shipments | None |
| 4. Land Value | 0 | Mod | Low | Yes | Long | No | None | None |

Table 1. Summary of Significant Adverse Environmental Impacts, Proposed Mitigating Measures, and Practical Alternatives (Continued, page 2 of 3)

| Action | Phase* | Magnitude | Significance | Reversible | Duration (Term) | Avoidable | Mitigating Measures | Alternatives |
|---|---|---|---|---|---|---|---|---|
| PLANT SITE, cont. | | | | | | | | |
| Water Resources and Geotechnical | | | | | | | | |
| 1. Erosion/Sedimentation from Land Clearing, Grading, and Access Roadway | C | Mod | Low | Yes | Short | No | Minimize slopes; soil stabilizers; buffers; artificial structures | None |
| 2. Dredging | C | Mod | Low | Yes | Short | No | None | None |
| 3. Oil Spills | C | Low | Low | Yes | Short | No | None | None |
| 4. Oil Spills | 0 | Low | Low | Yes | Short | No | None | None |
| 5. Wastewater Discharge to Ship Channel | 0 | Low | Low | Yes | Long | No | Chemical treatment | Discharge to marsh or use outfall in Bay |
| 6. Stormwater Discharge to Freshwater Marsh | 0 | Low | Low | Yes | Long | Yes | Chemical treatment | Discharge to ship channel or to marsh and ship channel |
| Ecology | | | | | | | | |
| 1. Loss of Pine Forest and Wildlife Habitat | C | Low | Low | No | Long | No | None | None |
| 2. Loss of Wetlands for Access Corridor | C | Low | Low | No | Long | No | None | Access from Dauphin Island Parkway; bridging the marsh |
| 3. Loss of Habitat for Special Species | C | Low | Low | No | Long | No | None | None |
| 4. Dredging | C | Low | Low | Yes | Short | No | None | None |
| 5. Noise Effects | C | Low | Low | Yes | Short | No | None | None |
| 6. Erosion/Sedimentation | C | Low | Low | Yes | Short | No | None | None |
| 7. Oil Spills | C | Low | Low | Yes | Short | No | None | None |
| 8. Noise Effects | 0 | Low | Low | Yes | Long | No | No | None |
| 9. Oil Spills | 0 | Low | Low | Yes | Short | No | None | None |
| 10. Stormwater Discharge to Freshwater Marsh | 0 | Low | Low | Yes | Long | Yes | None | See Water Resources/ Geotechnical |
| 11. Wastewater Discharge to Ship Channel | 0 | Low | Low | Yes | Long | No | No | See Water Resources/ Geotechnical |

Table 1. Summary of Significant Adverse Environmental Impacts, Proposed Mitigating Measures, and Practical Alternatives (Continued, page 3 of 3)

QUARRY SITE

| Action | Phase* | Magnitude | Significance | Reversible | Duration (Term) | Avoidable | Mitigating Measures | Alternatives |
|---|---|---|---|---|---|---|---|---|
| QUARRY SITE<br>Air Quality | | | | | | | | |
| 1. Fugitive Dust | C | Low | Low | Yes | Short | No | Chemical stabilizers; wind breaks | None |
| 2. Controlled Burning of Vegetative Wastes | C | Low | Low | Yes | Short | Yes | None | Landfilling; on-site burial |
| 3. Fugitive Dust--Quarry Area | 0 | Mod | Low | Yes | Long | No | Chemical stabilizers | None |
| 4. Fugitive Dust--Other Areas | 0 | Low | Low | Yes | Long | No | None | Enclosing and venting to control devices |
| Noise | | | | | | | | |
| 1. Construction Activities | C | Low | Low | Yes | Short | No | None | None |
| 2. Plant Operation | 0 | Low | Low | Yes | Long | No | None | None |
| Solid Waste | | | | | | | | |
| 1. Landfilling | C | Low | Low | Yes | Long | No | None | On-site burial |
| 2. Landfilling | 0 | Low | Low | Yes | Long | No | None | On-site burial |
| Water Resources and Geotechnical | | | | | | | | |
| 1. Erosion and Sedimentation | C | Low | Low | Yes | Short | No | Greater use of erosion controls | None |
| 2. Discharge of Runoff | 0 | Low | Low | Yes | Long | No | None | Vegetative buffers; quarry pit storage |
| 3. Drainage | 0 | Low | Low | No | Long | No | None | None |
| 4. Groundwater | 0 | Low | Low | No | Long | No | None | None |
| Ecology | | | | | | | | |
| 1. Loss of Existing Vegetation | C&O | Low | Low | Yes | Long | No | None | None |
| 2. Loss of Habitat for Existing Species | C&O | Low | Low | Yes | Long | No | Create ecological blend areas | None |
| 3. Loss of Habitat for Special Species | C&O | Low | Low | Yes | Long | No | None | None |
| 4. Erosion and Sedimentation | C&O | Low | Low | Yes | Long | No | None | None |
| 5. Dust and Noise Effects | C&O | Low | Low | Yes | Long | No | None | None |
| 6. Topography and Drainage | 0 | Low | Low | No | Long | No | None | None |
| 7. Waterway Traffic | 0 | Low | Low | Yes | Long | No | None | None |

*Phases: C = construction
0 = operation

Source: Environmental Science and Engineering, Inc., 1978.

Alternatives are practical actions that could be taken in place of the proposed action. The alternatives are rated according to their specific environmental impacts and economic feasibility.

As indicated in Table 1, the adverse impacts of the project are typically considered to be of low to moderate magnitude and low significance; reversible, and unavoidable. The construction impacts will usually be short-term, whereas the operational impacts will persist throughout the project life of 50 years (long-term). The irreversible impacts relate to permanent effects on land, such as dredging, land clearing, and drainage patterns. The avoidable impacts have viable alternative actions that do not affect the same environmental parameters. The only avoidable impacts are considered to be the burning of vegetative wastes and the discharging of general stormwater runoff to the freshwater marsh. Burning could be completely replaced by chipping or landfilling methods, and stormwater runoff could be discharged to the ship channel. In both these cases, the impact on air quality and wetland vegetation would be eliminated by these replacement actions.

Ideal Basic Industries has proposed numerous environmental safeguards that should effectively reduce the potential impacts to the low level of impact shown in the table. Possible mitigating measures are limited because of these planned safeguards. Measures that could be taken to further reduce the adverse impacts are listed in the mitigating measures column of Table 1.

In addition to the adverse impacts associated with the project, there will be several important positive impacts. The economic stimulus of the construction and operation of the cement plant will be of a high magnitude and moderate significance in the Mobile area. Similar economic effects of moderate magnitude and significance will occur in the Monroe County area because of the limestone quarry. These effects are discussed in the socioeconomic sections.

Practical alternative actions that would modify the adverse impacts are presented in the last column of Table 1. Other alternatives not shown but assessed in the document are:

1. Environmental characteristics of air quality, noise levels, water quality, aquatic and terrestrial communities, and land uses 15 years in the future (1992) without the proposed project being constructed and operated;
2. Twenty-seven possible plant locations;
3. Possible quarry sites;
4. Three types of the main raw material--limestone, oyster shells, and aragonite;
5. Two types of cement manufacturing processes (wet and dry);
6. Fuels and resources that could be utilized;
7. Possible arrangements of facility layout; and
8. Reclamation of quarried areas to pastureland, timberland, or industrial use.

The information in this section gives a brief overview of the proposed project's effects on the environment. Detailed analyses are presented in the following sections of this summary document and the various appendices.

# PROJECT HISTORY

Ideal Basic Industries, Inc. was founded by Charles Boettcher, a Denver entrepreneur who acquired controlling interest in a small cement plant near Portland, Colorado, in the late 1890's. The cement company formed by Mr. Boettcher expanded into the southcentral and plains states, and after World War II established facilities in the southeastern states and the far west. The present Ideal plant at Mobile, purchased in 1946, was an operation designed during the war to process low-grade aluminum ore.

Potash Company of America was merged with Ideal Cement Company in 1967, and the corporate name became Ideal Basic Industries. The company has also acquired a short-line railroad, two natural gas pipeline companies, a marine cement transport operation, a sand and gravel company, a limestone producing operation, and a coal production company. Through subsidiaries, the company engages in real estate development at several locations. The Potash Division is the largest producer of potash in the United States and the second largest in North America. The Cement Division is the largest manufacturer of cement in the country, with an annual productive capacity of 5.9 million metric tons (6.5 million tons).

The proposed Ideal Basic Industries manufacturing plant in Theodore would be the largest facility of its kind ever constructed in a single stage in the United States. The plant, which would utilize a dry-process suspension preheater system designed for maximum thermal efficiency, would involve the expenditure of more than $20 million for air and water pollution abatement. The two projects will cost over $200 million (in 1977 dollars) and will provide over $7.9 million (in 1977 dollars) annually in direct and indirect salaries.

## SITE SELECTION

This section describes the plant site selection and limestone supply studies performed by Ideal Basic Industries. Although these studies were not conducted as part of the EIS, they demonstrate that the final site selections for the plant and quarry are environmentally sound.

The proposed Theodore project is the outcome of a 5-year planning process. Market studies conducted in 1972 identified a strong demand for cement manufacturing capacity to serve the Gulf Coast market. This market was defined to include the coastal areas of Louisiana, Alabama, Mississippi, and Florida that were also served by Ideal's plant and terminal facilities at New Orleans, Baton Rouge, Lake Charles, Mobile, and Tampa. The magnitude of demand was placed at 1.4 million metric tons (1.5 million tons) of cement per year. The options available for meeting this demand were:

1. Modernization and expansion of existing plants,
2. Multiple new plant locations, and
3. Consolidated capacity at a single new location.

Upgrading of existing facilities was evaluated for the Ideal Basic Industries plants at Ada (Oklahoma), Okay (Arkansas), Baton Rouge, and Mobile. Investigations conducted in 1972 and 1973 concluded that the Ada and Okay plant sites could accommodate additional production, but that the advantages of these sites would be negated by problems arising from their locations geographically removed from the Gulf Coast market. Neither the Mobile nor Baton Rouge operations could be upgraded without demolishing the present facilities; this step would be highly undesirable in view of demolition costs, the loss of revenues during construction, and the potential loss of market position.

The second option considered would have involved two new 700,000 metric ton (750,000-ton) per year plants rather than a single plant. This possibility was ruled out by differentials in capital and operating costs. Even allowing for the transportation cost savings with two plants, the single-plant option would be roughly 25 percent lower than the multiple-plant option in terms of the total cost of sales.

The evaluation of potential sites for a single new cement plant was a lengthy process involving three levels of screening. The major site selection criteria were the following:

1. Site availability;
2. Physical suitability and engineering feasibility;
3. Access to deep water transportation;
4. Location with respect to expected markets;
5. Location with respect to raw material supply sources;
6. Capital and operating costs;
7. Highway, rail, and other supporting facilities;
8. Environmental compatibility;
9. Community resources;
10. Land use compatibility; and
11. Natural hazards.

The criteria involving transportation (Items 3 through 5 above) were attributed great importance. Cement and its component materials are high in weight relative to value, so that moderate differentials in the distances or unit costs of transport can be critical to the overall profitability of a cement manufacturing operation. Water transportation is generally cheaper than other available modes and is more flexible than rail in terms of scheduling and ownership of equipment. Therefore, access to water transportation was considered a limiting prerequisite for any potential site. Because of the cost advantages of deep-draft vessels relative to shallow-draft barges, a high premium was placed on sites with access to deep water [10-meter (30-foot) depth or more].

Twenty-seven potential plant sites were identified in 1973 and 1974 with the assistance of state and local development agencies, port authorities, chambers of commerce, and utility companies. These included 12 sites in Alabama, 5 in Mississippi, 6 in Louisiana, 3 in Florida, and 1 in Georgia. A first-level screening based on the above criteria resulted in the elimination of 19 sites from further consideration. Six of the eight remaining candidate sites were located in Alabama.

One of the Alabama sites surviving the first cut was the Monroe County Gaillard tract which was already partially owned by Ideal Basic Industries. The Gaillard tract was under consideration as a source of limestone, whether or not it was also selected as the plant location. The remaining Alabama sites included: a property in Jacintoport; the old shipyard site in Chickasaw; Blakely Island in Mobile; a bayfront property adjacent to the route of the Theodore Ship Channel; and the Barrett property, located inland on the ship channel. The second-level screening eliminated the two sites outside Alabama (at Pascagoula and Lake Charles) and all of the Alabama sites except the Gaillard tract and the Barrett property. Physical constraints upon site development were important in several cases.

Further analysis of the Gaillard tract and the Barrett property as potential plant sites revealed many points of difference. However, there was no decisive advantage for either site in terms of cost-effectiveness, since the lower capital and operating costs of production at Gaillard would be offset by the need to build and operate a distribution terminal in Mobile. The critical factors leading to rejection of the Gaillard tract were potential problems involving equipment delivery, labor force availability, construction of transportation facilities, navigability of the Alabama River during extreme conditions, availability of specialized industrial services, and flexibility in securing raw materials and marketing plant outputs. A preliminary analysis of environmental impacts suggested that some detrimental effects would occur at either location and that the impacts of the plant would be somewhat less severe on the whole at the Theodore site. Therefore, the Barrett property was acquired by Ideal Basic Industries and designated as the preferred location of the new manufacturing facility.

In addition to the plant site selection process, various alternatives to the use of limestone from the Gaillard tract have been considered. At least two other calcium carbonate (calcareous) materials, oyster shells or aragonite, could serve as the principal ingredient of cement. The existing Ideal Basic Industries plant in Mobile utilizes oyster shells dredged from Mobile Bay. Oyster shells, however, would not be a feasible source of calcium carbonate for the Theodore facility, since the existing supply is limited and would not be available for the entire 50-year estimated life of the cement plant.

Aragonite is a high purity calcareous sand that is precipitated from sea water. The only economically recoverable deposits known to exist are found in the Bahamas, roughly 1,300 kilometers (800 miles) from Mobile. The chemical properties of aragonite are highly favorable for cement manufacturing, but the use of this material would involve several disadvantages. There would be risks of price fluctuation, disruption of supply, and increase in ocean freight rates. The most significant disadvantage is that aragonite materials contain chlorides which would have to be removed by a washing operation involving 2 to 13 million liters (0.5 to 3.5 million gallons) of water per day. Such an operation could overtax the capacity of water supply facilities at the Theodore Industrial Park and could create a wastewater disposal problem. Therefore, because of environmental and economic considerations, aragonite has been rejected in favor of limestone as the calcium carbonate source.

Ideal Basic Industries searched the Gulf Coast area for sources other than the Gaillard tract which could supply a suitable amount of limestone per year. Most potential sites were rejected because of limestone characteristics, difficulties in quarrying, site acquisition problems, or excessive transportation costs. The best location other than the Gaillard tract was a site near Crystal River, Florida. The ultimate selection of Gaillard was primarily an economic decision based on the accessibility of the site by barge and its relative proximity to Theodore.

## PLANT SITE

### LOCATION

The proposed cement plant site is located in south Mobile County just beyond the southern edge of the city limits of Mobile, Alabama (see Figure 2). The 70.8-hectare (175-acre) site is within the Theodore Industrial Park, a 1,800-hectare (4,400-acre) area. Completion of the federally-authorized Theodore Ship Channel will provide deep water access for industries within the park.

Development of the Theodore Industrial Park began in the 1960's with a purchase by the Alabama State Docks Department of federal lands which formerly had contained an ammunition depot. Roadways and utilities were extended into the area, and water access was provided by construction of a 3.7-meter (12-foot) deep barge canal along the approximate alignment of the Middle Fork Deer River. The barge canal is soon to be replaced by the Theodore Ship Channel, a waterway of 12-meter (40-foot) depth which will extend from the Mobile Bay Channel to Rangeline Road. Over one-half billion dollars already has been invested by manufacturing firms in Theodore Industrial Park, and a high rate of development is projected for the future.

The Ideal Basic Industries plant site, which is part of the Theodore Industrial Park, is bounded on the south by the barge canal; on the west by the Airco plant site; on the east by the Dauphin Island Parkway; and on the north by a narrow strip of land bordering the State Docks Terminal Railway (see Figure 3). The property is uninhabited and is covered primarily by remnant pine and scrub vegetation that has been affected by previous (1974) lumbering activity. The North Fork Deer River, bordered by freshwater and saltwater marsh systems, crosses the central portion of the property. The proposed cement manufacturing facility would occupy only the area located south of this river.

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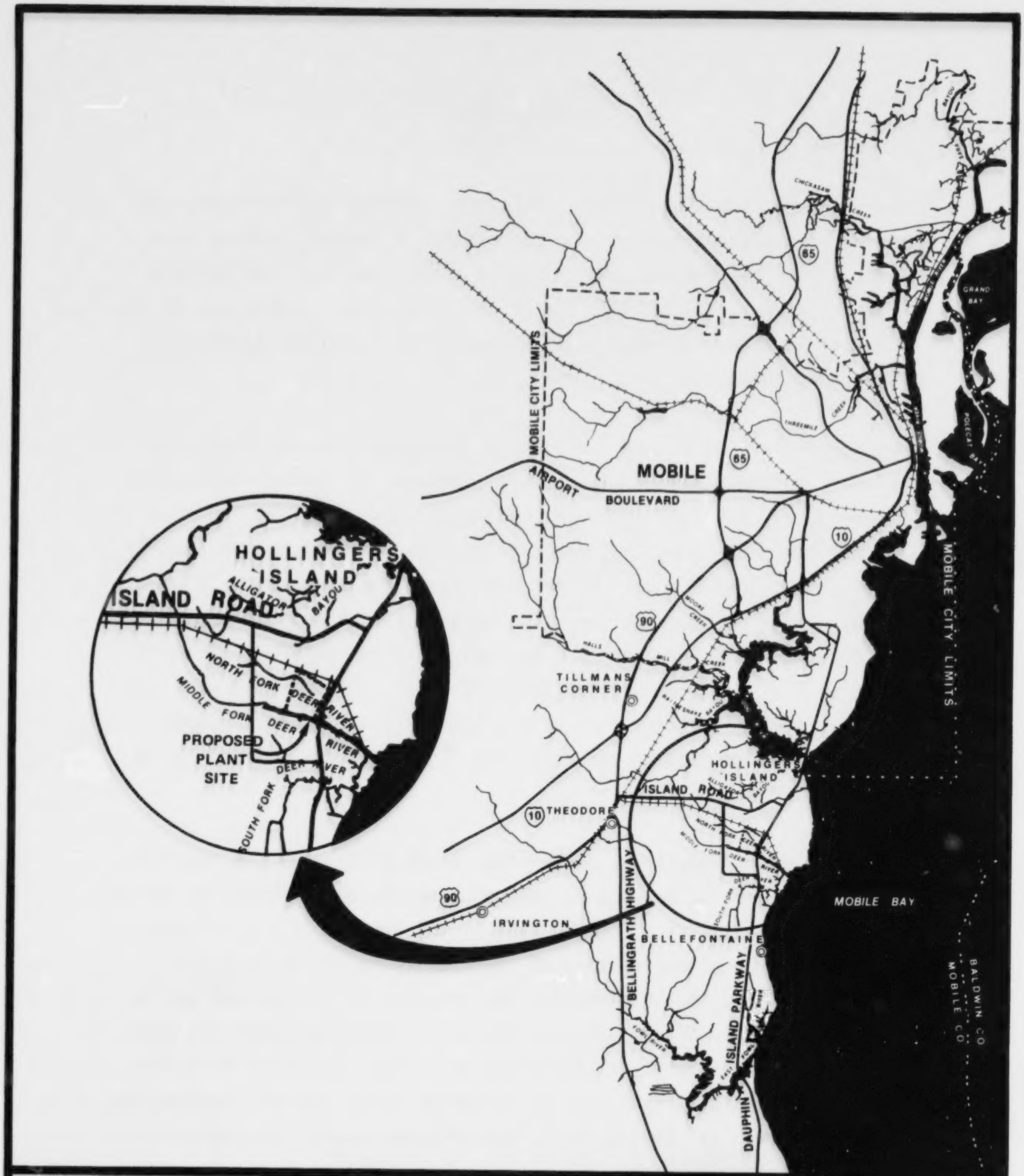
HOLLINGERS ISLAND
ISLAND ROAD
ALLIGATOR BAYOU
NORTH FORK DEER RIVER
MIDDLE FORK DEER RIVER
DEER RIVER
SOUTH FORK
PROPOSED PLANT SITE
CHICKASAW CREEK
BAYOU SARA
65
GRAND BAY
MOBILE CITY LIMITS
THREEMILE CREEK
MOBILE
AIRPORT BOULEVARD
POLECAT BAY
10
90
MOORE CREEK
HALLS MILL CREEK
TILLMANS CORNER
RATTLESNAKE BAYOU
THEODORE
IRVINGTON
BELLINGRATH HIGHWAY
BELLEFONTAINE
MOBILE BAY
ISLAND PARKWAY
FOWL RIVER
EAST FORK
DAUPHIN
BALDWIN CO
MOBILE CO

**Figure 2**
**THE PROPOSED PLANT SITE RELATIVE TO MOBILE, ALABAMA**

0 1 2
SCALE IN KILOMETERS

SOURCE. USGS, 1974.

REGION IV
U.S. ENVIRONMENTAL PROTECTION
AGENCY ENVIRONMENTAL IMPACT
STATEMENT FOR IDEAL BASIC INDUSTRIES

**PROPOSED CEMENT MANUFACTURING**
**PLANT THEODORE INDUSTRIAL PARK**
**MOBILE, ALABAMA**

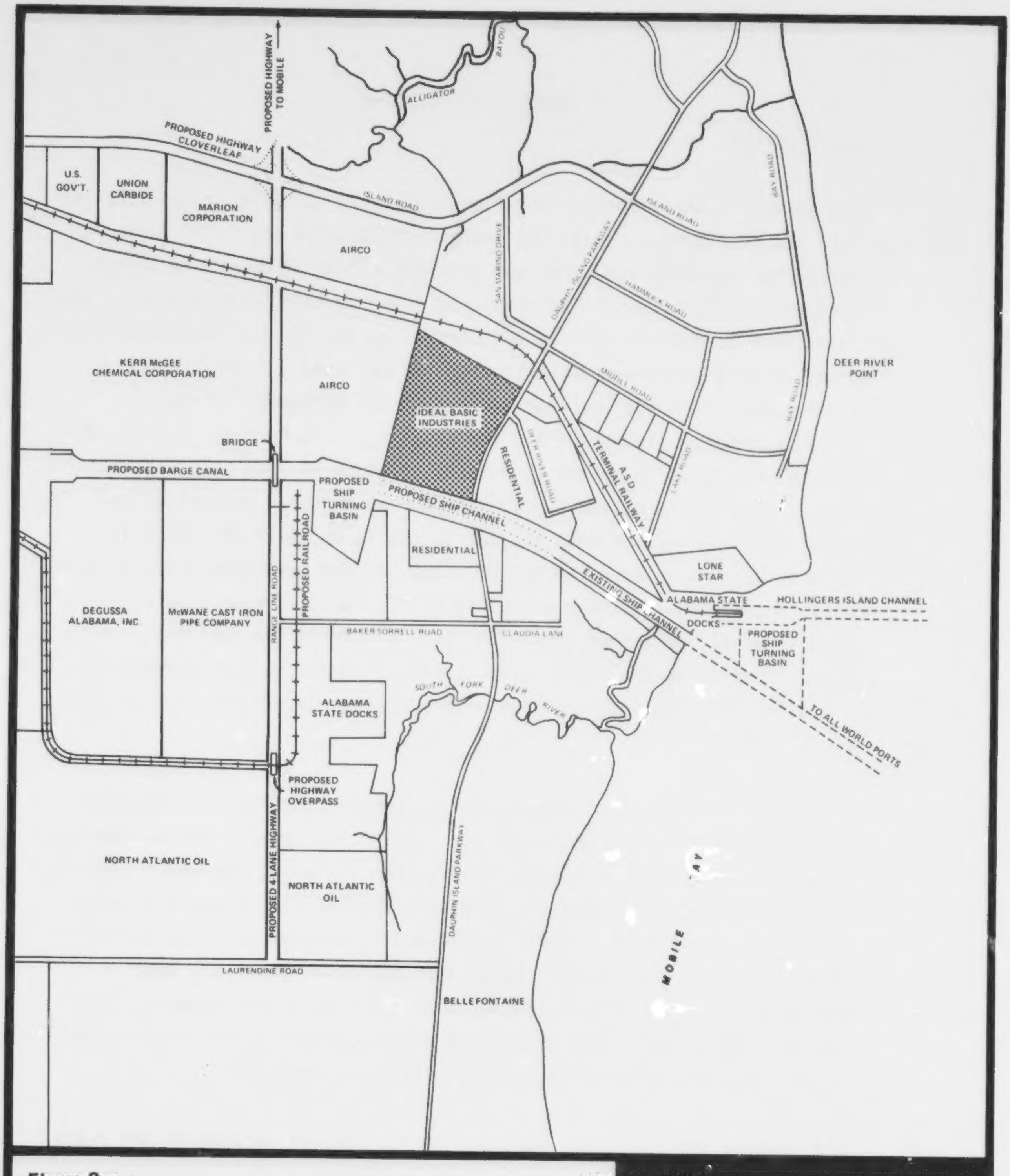
PROPOSED HIGHWAY TO MOBILE
ALLIGATOR
BAYOU
PROPOSED HIGHWAY CLOVERLEAF
U.S. GOV'T.
UNION CARBIDE
MARION CORPORATION
ISLAND ROAD
AIRCO
SAN MARINO DRIVE
DAUPHIN ISLAND PARKWAY
ISLAND ROAD
HAMMOCK ROAD
BAY ROAD
KERR McGEE CHEMICAL CORPORATION
AIRCO
IDEAL BASIC INDUSTRIES
MOBILE ROAD
DEER RIVER POINT
BAY ROAD
BRIDGE
RESIDENTIAL
DEER RIVER ROAD
A S D TERMINAL RAILWAY
LAKE ROAD
PROPOSED BARGE CANAL
PROPOSED SHIP TURNING BASIN
PROPOSED SHIP CHANNEL
PROPOSED RAILROAD
RESIDENTIAL
LONE STAR
EXISTING SHIP CHANNEL
ALABAMA STATE DOCKS
HOLLINGERS ISLAND CHANNEL
DEGUSSA ALABAMA, INC.
McWANE CAST IRON PIPE COMPANY
RANGE LINE ROAD
BAKER SORRELL ROAD
CLAUDIA LANE
PROPOSED SHIP TURNING BASIN
SOUTH FORK DEER RIVER
ALABAMA STATE DOCKS
TO ALL WORLD PORTS
PROPOSED HIGHWAY OVERPASS
NORTH ATLANTIC OIL
PROPOSED 4 LANE HIGHWAY
NORTH ATLANTIC OIL
DAUPHIN ISLAND PARKWAY
MOBILE BAY
LAURENDINE ROAD
BELLEFONTAINE

Figure 3
THE THEODORE INDUSTRIAL PARK SITE
(Adapted from Mobile Area Chamber of Commerce, 1976)

0 1000
SCALE IN METERS

SOURCE: Environmental Science and Engineering, Inc., 1978.

REGION IV
U.S. ENVIRONMENTAL PROTECTION AGENCY ENVIRONMENTAL IMPACT STATEMENT FOR IDEAL BASIC INDUSTRIES

**PROPOSED CEMENT MANUFACTURING PLANT THEODORE INDUSTRIAL PARK MOBILE, ALABAMA**

# PROJECT DESCRIPTION

## PLANT LAYOUT

The layout of the proposed cement manufacturing facility at Theodore is depicted in Figure 4. Only the southern portion of the Ideal Basic Industries property and an access corridor extending along the western edge of the property will be developed. The wetland areas bordering the North Fork Deer River will be undisturbed except for the access corridor crossing in the freshwater portion of the wetlands. There will be no encroachment into the brackish portion of the wetlands. Along the eastern property line bordering the Dauphin Island Parkway, a strip of wooded land about 90 meters (300 feet) in width will be left undeveloped. This vegetated strip, plus the wooded northern portion of the Ideal property and the ship channel to the south, will all serve as natural buffers between the cement plant and the developed areas along these boundaries. A 20-meter (65-foot) high dead-storage pile of limestone will be formed along the eastern side of the facility. Besides providing the plant approximately a 60-day supply of reserve limestone, the dead-storage pile will reduce noise effects east of the plant site.

The entire waterfront at the plant site [about 716 meters (2,350 feet)] will be developed as a dock area for loading, unloading, and holding of marine equipment. The docking facility for unloading raw material will accommodate barges berthed two abreast. The facility's depth of water will vary depending upon draft requirements; however, a conservative depth of 12 meters (40 feet) below mean sea level (msl) has been projected to coincide with the depth of the future ship channel. The marine terminal will have a concrete wharf elevated to the level of the plant site, approximately 4.6 meters (15 feet) above msl.

The process areas will be clustered in the central portion of the plant site. The tallest structures will be two 90-meter (300-foot) high stacks and two 76-meter (250-foot) high suspension preheaters. A railcar unloading and staging area will be located in the northern portion

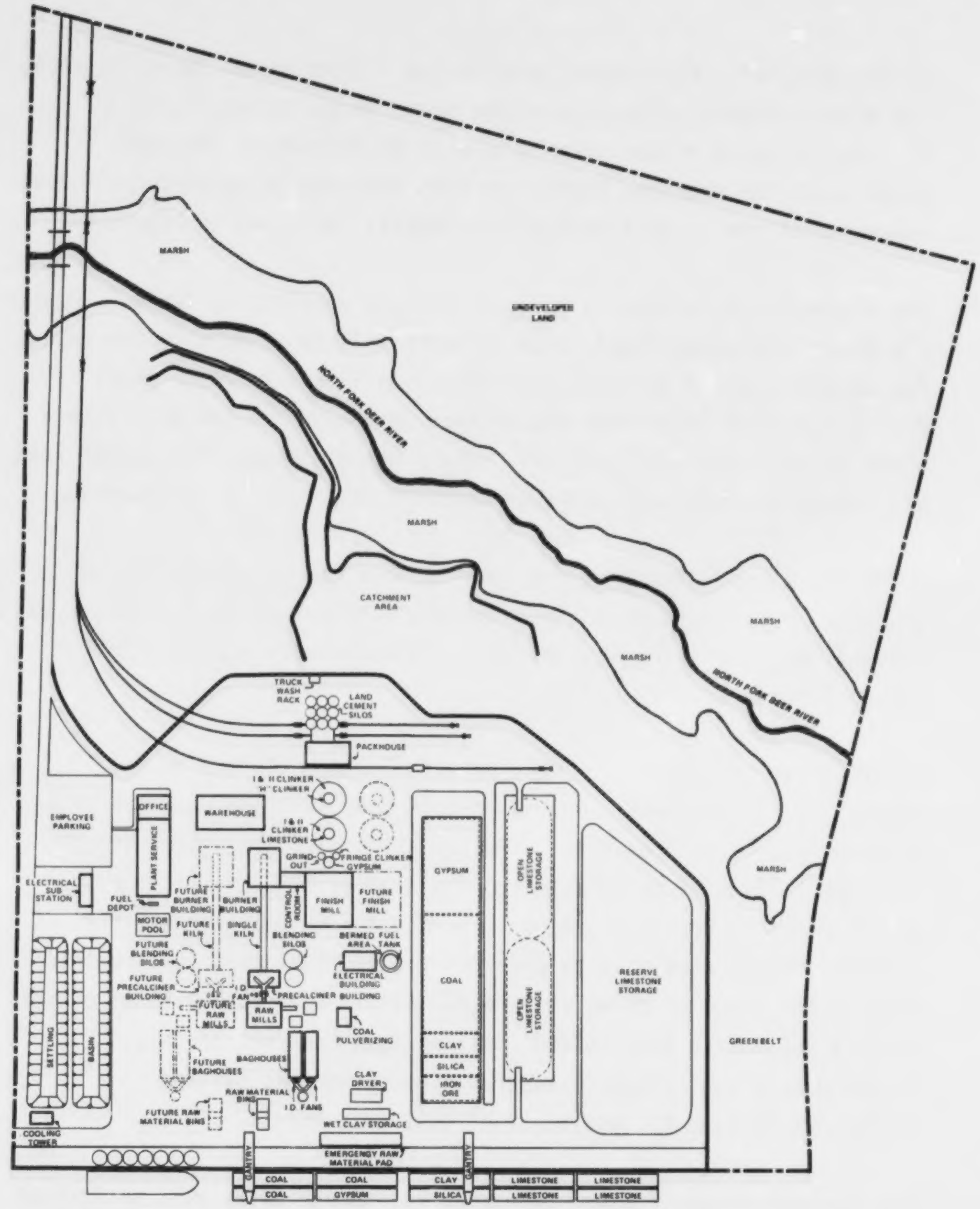
MARSH
UNDEVELOPED LAND
NORTH FORK DEER RIVER
MARSH
CATCHMENT AREA
MARSH
MARSH
NORTH FORK DEER RIVER
TRUCK WASH RACK
LAND CEMENT SILOS
PACKHOUSE
I & II CLINKER
'H' CLINKER
I & II CLINKER
LIMESTONE
EMPLOYEE PARKING
OFFICE
PLANT SERVICE
WAREHOUSE
GRIND-OUT
FRINGE CLINKER
GYPSUM
ELECTRICAL SUB STATION
FUEL DEPOT
FUTURE BURNER BUILDING
BURNER BUILDING
CONTROL ROOM
FINISH MILL
FUTURE FINISH MILL
MOTOR POOL
FUTURE KILN
SINGLE KILN
BLENDING SILOS
BERMED AREA
FUEL TANK
FUTURE BLENDING SILOS
ELECTRICAL BUILDING
FUTURE PRECALCINER BUILDING
I D FAN
PRECALCINER BUILDING
FUTURE RAW MILLS
RAW MILLS
COAL PULVERIZING
SETTLING
BASIN
FUTURE BAGHOUSES
BAGHOUSES
CLAY DRYER
RAW MATERIAL BINS
I D FANS
FUTURE RAW MATERIAL BINS
WET CLAY STORAGE
COOLING TOWER
GANTRY
EMERGENCY RAW MATERIAL PAD
GANTRY
GYPSUM
COAL
CLAY
SILICA
IRON ORE
OPEN LIMESTONE STORAGE
OPEN LIMESTONE STORAGE
RESERVE LIMESTONE STORAGE
GREEN BELT
COAL
COAL
COAL
GYPSUM
CLAY
SILICA
LIMESTONE
LIMESTONE
LIMESTONE
LIMESTONE

**Figure 4**
**PROPOSED PLANT PLOT PLAN**

0 100
**SCALE IN METERS**

**SOURCE: Ideal Basic Industries, 1977.**

REGION IV
U.S. ENVIRONMENTAL PROTECTION
AGENCY ENVIRONMENTAL IMPACT
STATEMENT FOR IDEAL BASIC INDUSTRIES

**PROPOSED CEMENT MANUFACTURING**
**PLANT THEODORE INDUSTRIAL PARK**
**MOBILE, ALABAMA**

of the site, with rail access provided by a track extending north along the western property boundary to the State Docks Terminal Railway. Non-process areas of the plant site will be landscaped wherever practical. The proposed layout has been designed to accommodate future expansion of the plant's production capacity, as shown in Figure 4.

The project plan includes a 150-car employee parking lot and a 7.3-meter (24-foot) wide access road, both of which will be paved with concrete. The access road and railroad spur line will form a corridor about 47.2 meters (155 feet) from the western boundary line and will extend north to the connection with the State Docks Railroad. The access road will continue north and intersect Island Road (Hamilton Boulevard).

A 380,000-liter (100,000-gallon) aboveground fuel oil tank will be on-site. Although coal is the principal fuel to be used in the process, oil will be used to preheat the kiln and to produce a pilot flame for the coal burners.

A portion of the plant site will be utilized for storage of raw materials. Approximately 604,000 metric tons (665,000 tons) of limestone will be stored on-site, of which all but 110,000 metric tons (120,000 tons) will be in dead storage. About 4,200 metric tons (4,600 tons) of wet clay will be stored near the docking facility. A covered storage area will be provided for approximately 3,300 metric tons (3,600 tons) of dried clay; 4,200 metric tons (4,600 tons) of wet sand; 4,200 metric tons (4,600 tons) of iron ore (wet basis); 27,000 metric tons (30,000 tons) of gypsum (wet basis); and 45,000 metric tons (50,000 tons) of coal (wet basis).

The stormwater runoff from the uncovered storage areas will be drained to a settling basin and mixed with the stormwater runoff from the containment area around the oil storage tank and with wastewater from cooling tower blowdown and various process wash areas. The wastewater will be treated for reduction of suspended solids before being discharged to the ship channel. The approximate capacity of the basin will be 16 million liters (4.2 million gallons). The average daily flow from the basin is expected to be 341,000 liters (90,100 gallons).

Another physical feature of the plant design is that the site will be graded so that storm water will drain to the north into an approximately 2-hectare (5-acre) catchment area. This area, which will be formed during construction by grading and berming the low side of the area, will contain the first flush from a rainstorm and will reduce the suspended particulate loading of the runoff prior to discharging it into the freshwater marsh.

## PLANT CONSTRUCTION

Construction of the cement manufacturing plant is scheduled to start in the third quarter of 1978 and will last approximately 30 months. The facility will have an effective operating life of about 50 years and will be constructed at a cost of over $165 million (in 1977 dollars). The construction labor force will average 360 workers during the construction period, with a peak of 700 workers. The total construction payroll will be approximately $15,000,000 in 1977 dollars, and another $10,000,000 will be spent for local purchases of construction materials. Approximately 80 to 85 percent of construction workers involved in the project at Theodore will be local hires, i.e., workers already living in south Alabama who will commute to the site on a daily basis.

The first stage of construction will involve clearing and grading of the access corridor and a site area of about 20 hectares (50 acres). Land-clearing debris (wood and brush) will be disposed of by three methods: burning in an air-blower type pit burner; chipping for use on-site as mulch; and hauling to the Irvington Landfill. Since the area was logged in 1974, there will be a minimum of large trees to be cleared. About 130,000 cubic meters (170,000 cubic yards) of soil will be moved during the grading period, with cut and fill activities balanced so that there is no excess excavation material.

Later construction activities will include erection of structures and equipment, installation of utility connections, final grading, and revegetation. Approximately 14,000 to 16,000 piles will be driven to provide adequate foundations for structures. Construction of the docking facility will require dredging approximately 500,000 cubic meters (650,000 cubic yards) of material. It is anticipated that this material will be disposed in one of the approved spoil disposal areas to be used for the ship channel project.

## CEMENT MANUFACTURING PROCESS

The dry process manufacturing plant proposed by Ideal Basic Industries requires limestone, sand, clay, and iron ore to be ground and mixed in specific proportions. The mixture is fed into a rotating furnace, or kiln, where high temperatures fuse the materials into marble-sized granules called clinker. The clinker is then mixed with gypsum and ground again to form cement. The end product is a fine powder which is shipped primarily in bulk. A flow diagram of the cement manufacturing process is presented in Figure 5.

Three general characteristics of the proposed dry cement manufacturing process are the efficient use of waste heat, a high degree of material recycling, and the use of air pollution control equipment in the material-handling and recycling functions of the plant. Because the manufacturing process involves handling of dry, finely-ground materials, a potential environmental problem is the emission of particulate matter to the atmosphere. These emissions are controlled by venting dust-laden gas streams through fabric filter collectors known as baghouses, which have collection efficiencies of over 99 percent and have been approved by EPA as the best available control technology (see Air Quality section). All materials collected by these devices are recycled into the cement manufacturing operation, thus conserving resources and preventing accumulation of solid wastes.

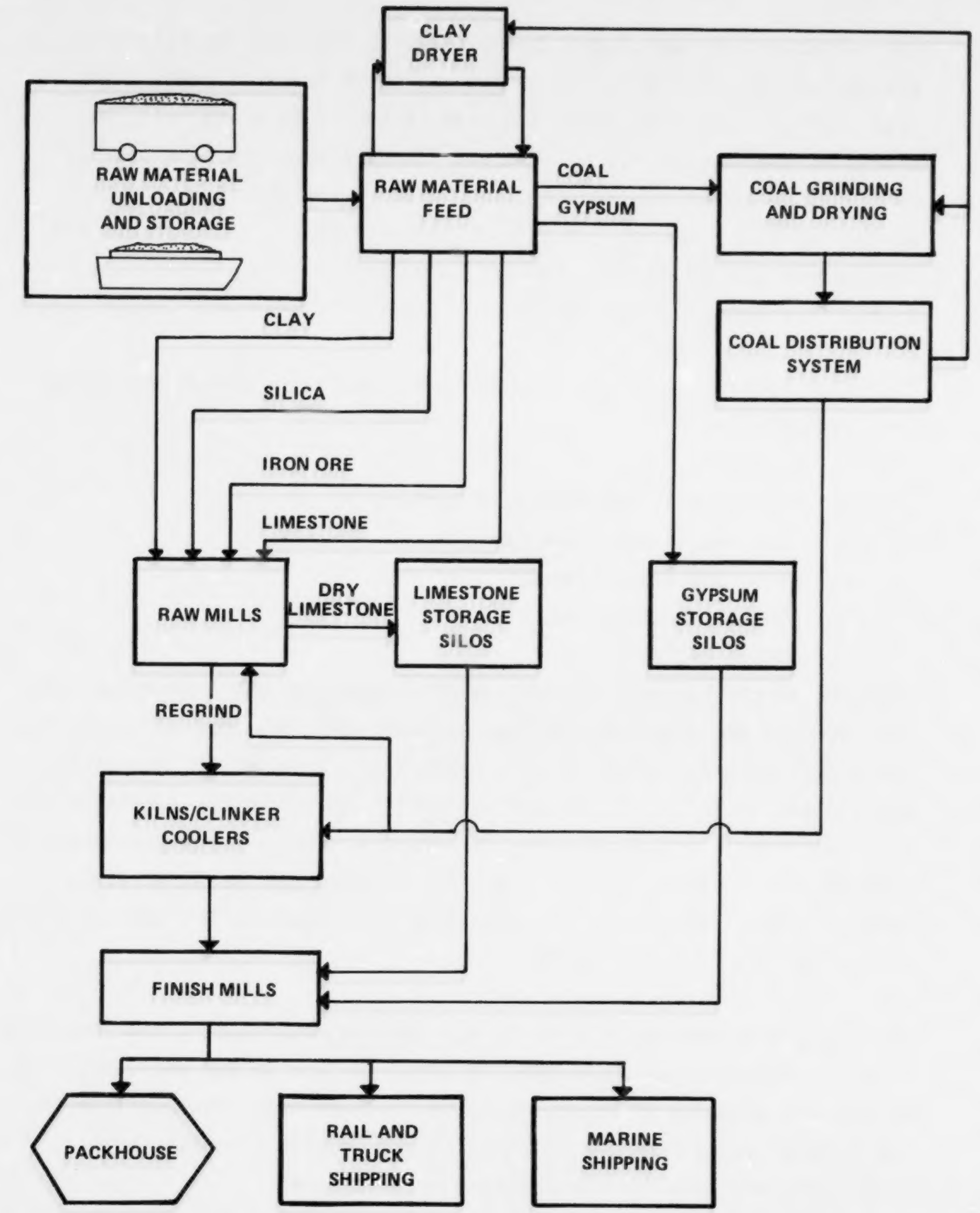
CLAY DRYER
RAW MATERIAL UNLOADING AND STORAGE
RAW MATERIAL FEED
COAL
GYPSUM
COAL GRINDING AND DRYING
COAL DISTRIBUTION SYSTEM
CLAY
SILICA
IRON ORE
LIMESTONE
RAW MILLS
DRY LIMESTONE
LIMESTONE STORAGE SILOS
GYPSUM STORAGE SILOS
REGRIND
KILNS/CLINKER COOLERS
FINISH MILLS
PACKHOUSE
RAIL AND TRUCK SHIPPING
MARINE SHIPPING

**Figure 5**
**FLOW DIAGRAM OF PROPOSED PLANT PROCESS**

SOURCE: Environmental Science and Engineering, Inc., 1977.

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The raw materials, which will be received at the plant by rail or water transportation, will be unloaded and stored in specific areas. The coal, gypsum, iron ore, sand, and clay (after it is dried) will be stored in the covered stockpile area. The wet limestone and clay will be placed in uncovered storage piles. The raw materials have a high natural moisture content (roughly 21 percent) which should reduce the dust generation potential. However, a water spray dust suppression system is planned for use on conveyor transfer points and storage piles.

The major components of the proposed dry cement manufacturing process are the following:

1. Raw mills,
2. Regrind mill and kiln feed system,
3. Kiln suspension preheaters,
4. Kilns and precalciners,
5. Clinker coolers, and
6. Finish mills.

Starting in the raw mill circuit, most elements of the production process are divided into two parallel systems, each designed to handle half the plant's process weight (i.e., there are two raw mills, two kilns, two clinker coolers, etc.). Another design option is the substitution of a single-kiln system as shown in Figure 4. The process parameters of a single kiln system, such as the process rate, fuel burning rates, exhaust volumes and emissions, should be approximately the same as the total from the two-kiln system.

The purpose of the raw mill is to dry the raw materials, grind them to a fine consistency, and store them in silos for use in the next area. The drying and grinding is accomplished in airswept mills that utilize the hot exhaust gases from the kiln and clinker cooler circuits, with additional heat provided by separate coal furnaces.

Next, the raw mix is fed into a regrind circuit for fineness control. An air separator allows fines to pass through the circuit while oversized material is returned for regrinding. The raw mix is blended for proper consistency and is transported into kiln suspension preheaters which utilize the kiln exhaust gases to heat the material. Just prior to entering the kiln, the raw mix is heated to about 840°C (1550°F) in a coal-fired precalciner. This additional heating reduces the size requirements for the kiln. Inside the kiln, the raw mix is thermally transformed into clinker at about 1480°C (2,700°F). The clinker is dropped from the kiln onto an enclosed grate and cooled with ambient air in the clinker cooler.

In the finish mills, the clinker is ground and mixed with gypsum to form portland cement. If dry limestone is also mixed with the clinker and gypsum, a masonry cement is produced. Six grades of cement are planned to be produced: five portland cements and one masonry cement.

The finished product is conveyed to two storage areas--marine silos for bulk cement shipments by water and land silos for all other shipments. The land silos serve the bulk rail car and truck loading facilities and also supply a packhouse that will bag approximately 5 percent of the total cement output.

## RESOURCE UTILIZATION

Each day's operation of the Ideal Basic Industries cement plant will require about 9,900 metric tons (10,900 tons) of wet raw materials and coal to produce 4,600 metric tons (5,100 tons) of dry cement. Limestone will be obtained from Ideal's Gaillard quarry at an average rate of 7,788 metric tons (8,585 tons) per day on a wet basis. An existing clay quarry operated by Ideal Basic Industries at 24-Mile Bend on the Alabama River, roughly 60 kilometers (40 river miles) from the plant site, will supply 645 metric tons (711 tons) of clay and 325 metric tons (358 tons) of sand per day. The clay reserves at the quarry amount to only a 5-year supply, so that another source of material must eventually be found.

Iron ore and gypsum, consumed at rates of 68 metric tons (75 tons) and 212 metric tons (234 tons) per day, respectively, will be obtained by Ideal Basic Industries from commercial suppliers. About 841 metric tons (927 tons) per day of coal will be required, depending upon heat content. The coal will have a maximum sulfur content, by weight, of 1.5 percent. The sulfur limitation is required for proper operation of the kiln suspension preheaters. Coal will be obtained on a contract basis from a supplier.

Electric service to the plant will be provided at 13.8 kilovolts by Alabama Power Company. Approximately 30 megawatts will be required for normal plant operations. Present plans for the transmission system indicate that aboveground power lines will be located within the plant's access corridor.

The daily requirements for potable and process cooling make-up water will be 1,080 cubic meters (285,000 gallons), which will be supplied by the Board of Water and Sewer Commissioners of the City of Mobile.

The plant will follow a 24-hour-per-day schedule for manufacturing operations. However, because of maintenance requirements and other factors, only an 85 percent operating rate for the pyroprocesses (kiln and raw mill) is projected. A total of 135 workers, including 26 supervisory personnel, will be employed at the plant. Most of the plant workers will be transferred from the existing Ideal Basic Industries facility in Mobile. The clay and sand quarry in north Mobile County will employ 10 additional workers, and the marine operations needed to support the Theodore plant will create approximately 50 jobs.

## TRANSPORTATION

Marine transportation will be utilized for an estimated 57.5 percent of all outbound shipments, by weight. Tentatively, all marine shipments will be destined for Ideal's terminal facilities in Louisiana and Florida. It is presently undecided whether Ideal Basic Industries will own and operate its own marine equipment, or whether independent contractors will be utilized. Truck transportation will account for 31.9 percent of outbound cement shipments, and rail transportation for 10.6 percent. Outside contractors will be used in both cases. The specifications of the land fleet vehicles and the number of workers involved in land transportation are indefinite at present.

## LAND USE SETTING

### PRESENT LAND USE

A map of the present land use in the vicinity of the Ideal Basic Industries plant site is presented in Figure 6. This area includes Theodore Industrial Park, the Hollingers Island community, and the Dauphin Island Parkway corridor from Deer River to Laurendine Road. A large proportion of the area consists of land that is currently vacant, i.e., not used for any purpose other than possibly hunting and harvesting of forest products. The other major land use categories represented are industry, residence, and transportation.

Most of the land west and southwest of the plant site either is held by manufacturing firms or is being marketed actively for industrial use. Less than half of this land is occupied by industrial establishments at the present time.

Residential land is predominant to the north, east, and south of the proposed plant site, but the overall density of settlement is low. A field count of dwelling units in 1977 revealed that the area within 4.8 kilometers (3 miles) of the plant site contained 974 dwelling units, with an average density of one dwelling unit for every 8 hectares (19 acres). Residential development is concentrated in waterfront areas (Alligator Bayou, Dog River, Mobile Bay) and in the Hollingers Island community east of the Dauphin Island Parkway. The residential properties closest to the proposed Ideal Basic Industries plant site are located on the southern portion of San Marino Drive, on the Dauphin Island Parkway directly across from the site, on Deer River Road, and in the area south of the barge canal but north of Baker Sorrell Road and Claudia Lane.

The land used for transportation includes street and highway rights-of-way, the State Docks Terminal Railway, and the barge canal. The major highways in the area are Rangeline Road, Island Road (also known as Hamilton Blvd.), and Dauphin Island Parkway. The use of these three

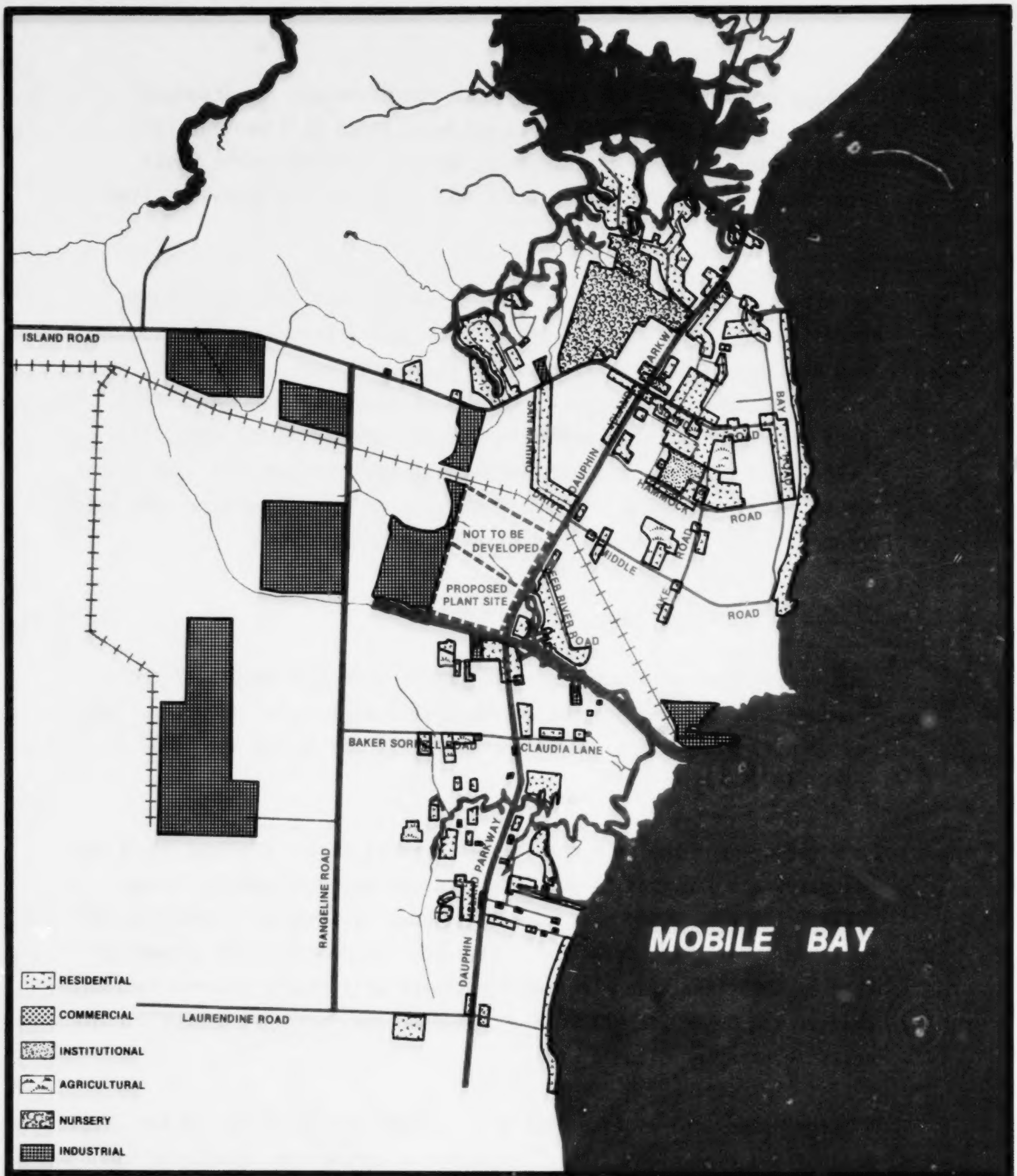
ISLAND ROAD
NOT TO BE DEVELOPED
PROPOSED PLANT SITE
DAUPHIN ISLAND PARKWAY
HAMMOCK ROAD
MIDDLE ROAD
LAKE ROAD
BAY ROAD
DEER RIVER ROAD
BAKER SORRELL ROAD
CLAUDIA LANE
RANGELINE ROAD
DAUPHIN PARKWAY
LAURENDINE ROAD
MOBILE BAY
RESIDENTIAL
COMMERCIAL
INSTITUTIONAL
AGRICULTURAL
NURSERY
INDUSTRIAL

**Figure 6**
PRESENT LAND USE IN THE VICINITY OF THE PROPOSED IDEAL BASIC INDUSTRIES PLANT SITE

0 0.5 1
SCALE IN KILOMETERS

SOURCE. Environmental Science and Engineering, Inc., 1977.

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highways provides the main north-south route through the Theodore Industrial Park. The State Docks Railway, which will provide rail access to the proposed cement plant, extends from the State Docks Terminal facility on Mobile Bay to the Louisville and Nashville line near Theodore.

The area contains a number of plant nurseries, the largest being an establishment at Island Road and Dauphin Island Parkway. Institutional land uses are limited to five small churches at various locations on the Parkway and the Hollingers Island Elementary School on Hammock Road. There are fewer than ten commercial establishments in the area, plus several small marinas and boatyards. The only recreational land within 4.8 kilometers (3 miles) of the plant site is a Bay Road park area which belongs to the Hollingers Island Community Association.

## FUTURE LAND USE

Land use changes will occur near the plant site as a result of the Theodore Ship Channel project and general pressures for industrial and residential development. A forecast of land use in the year 1992 is presented in Figure 7.

Land takings for the ship channel will result in the elimination of two boatyards and a number of dwellings located near the present barge canal. It is expected that some additional residential properties will be converted to industrial use. Figure 7 incorporates the assumption that by 1992 less than five dwelling units will remain between the ship channel and Baker Sorrell Road or Claudia Lane, with the exception of units fronting on Claudia Lane.

A large proportion of land within 4.8 kilometers (3 miles) of the Ideal Basic Industries plant site is expected to convert to industrial use, with possibly some commercial development along Island Road and Dauphin Island Parkway. The anticipated land use conversions are not dependent upon the presence of the cement plant. Without the proposed project,

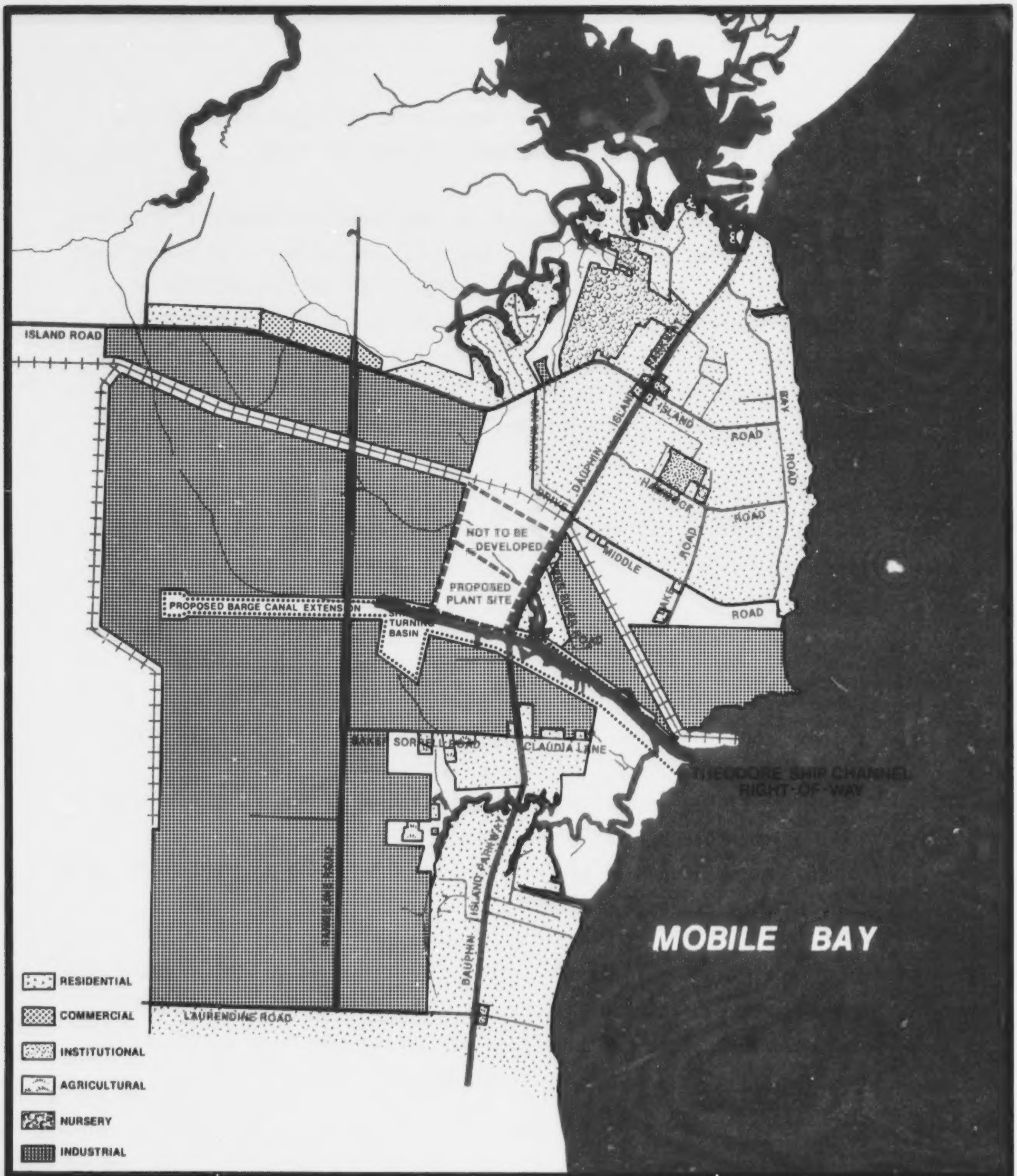
ISLAND ROAD
PROPOSED BARGE CANAL EXTENSION
NOT TO BE DEVELOPED
PROPOSED PLANT SITE
TURNING BASIN
DAUPHIN ISLAND
ISLAND
ROAD
HARBOR
ROAD
DRIVE
MIDDLE
ROAD
LAKE
ROAD
BAY
ROAD
SORRELL ROAD
CLAUDIA LANE
THEODORE SHIP CHANNEL RIGHT-OF-WAY
MOBILE BAY
DAUPHIN ISLAND PARKWAY
RANGELINE ROAD
LAURENDINE ROAD
RESIDENTIAL
COMMERCIAL
INSTITUTIONAL
AGRICULTURAL
NURSERY
INDUSTRIAL

**Figure 7**
PROJECTED LAND USE IN THE VICINITY OF THE PROPOSED IDEAL BASIC INDUSTRIES PLANT SITE, 1992

0 0.5 1
SCALE IN KILOMETERS
N

SOURCE. Environmental Science and Engineering, Inc., 1977.

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it is probable that the property, because of its value as waterfront land, would be developed by some other industrial firm.

Four important highway improvements in the Theodore Industrial Park area will be completed by 1985. These are: (1) the widening of Island Road (Hamilton Blvd.) to three lanes (by 1980); (2) the construction of Rangeline Expressway (by 1982); (3) the improvement of the Rangeline Road-Island Road intersection and conversion of Rangeline Road to four lanes between this intersection and Deer River; and (4) conversion of the Dauphin Island Parkway to four lanes from Perch Creek to Island Road.

Land use changes will occur near the plant site as a result of the Theodore Ship Channel project. The ship channel project (see Figure 8) will involve:

1. A channel of 12-meter (40-foot) depth and 90-meter (300-foot) bottom width, occupying a right-of-way up to 300 meters (1,000 feet) wide;
2. A bay cut of 122-meter (400-foot) bottom width providing deep-water access to the Mobile Bay channel;
3. A 17-hectare (42-acre) turning basin at the end of the ship channel near Rangeline Road;
4. An extension of the existing canal with 4-meter (12-foot) depth west of Rangeline Road.

A second turning basin at the mouth of the land cut has been authorized but will not be included in the initial construction program. Construction will take place during approximately the same time period as the proposed cement plant construction project.

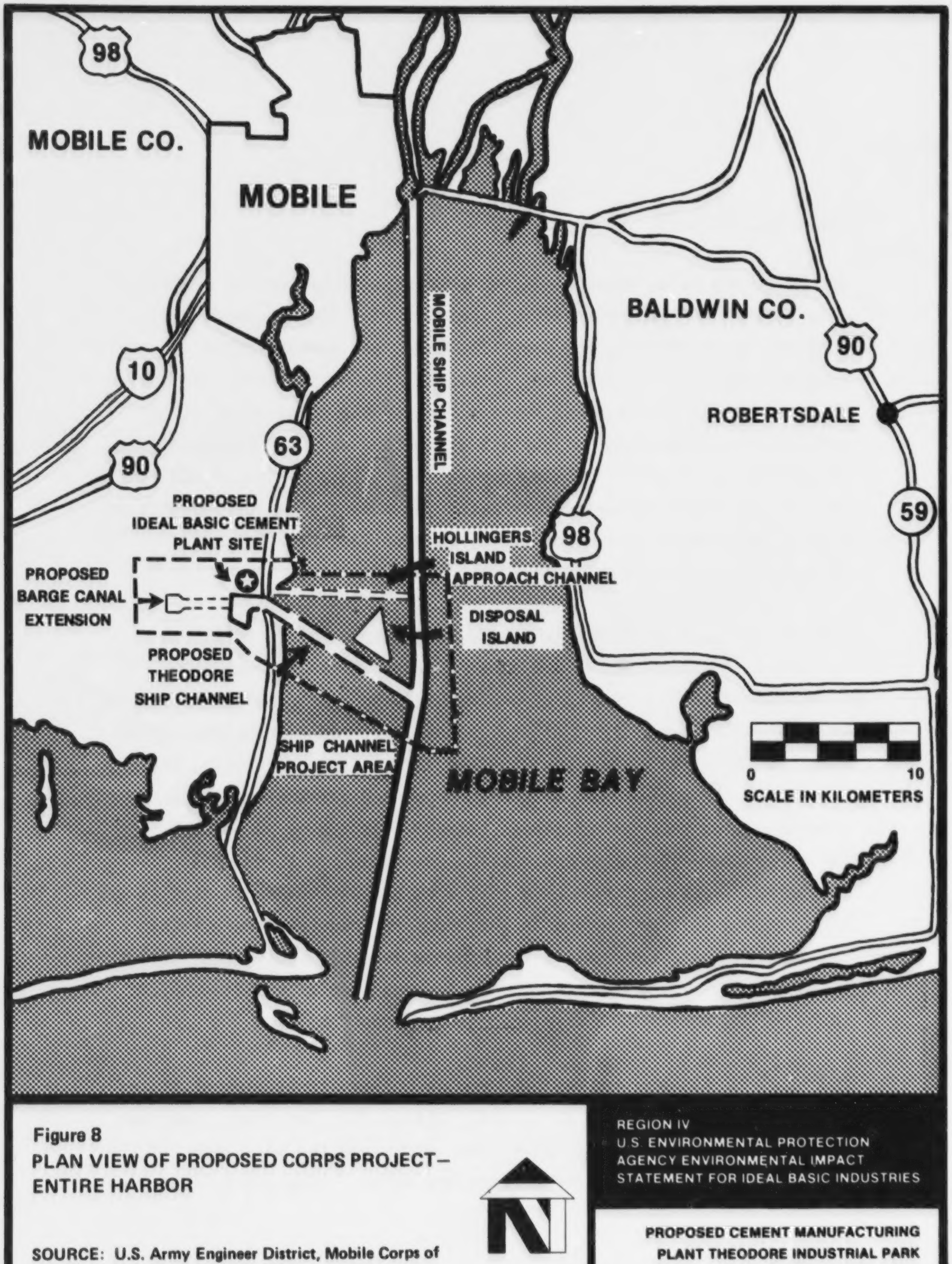
98
MOBILE CO.
MOBILE
MOBILE SHIP CHANNEL
BALDWIN CO.
90
10
ROBERTSDALE
63
90
59
PROPOSED
IDEAL BASIC CEMENT
PLANT SITE
HOLLINGERS
ISLAND
APPROACH CHANNEL
98
PROPOSED
BARGE CANAL
EXTENSION
DISPOSAL
ISLAND
PROPOSED
THEODORE
SHIP CHANNEL
SHIP CHANNEL
PROJECT AREA
MOBILE BAY
0
10
SCALE IN KILOMETERS

Figure 8
PLAN VIEW OF PROPOSED CORPS PROJECT–ENTIRE HARBOR

SOURCE: U.S. Army Engineer District, Mobile Corps of Engineers, 1975.

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# AIR QUALITY

## BASELINE CONDITIONS

Mobile County is an industrialized urban area with over 180 permitted point sources of air pollutants. These sources include paper mills, chemical manufacturers, the power industry, and various other industries located primarily in waterfront areas near the Mobile River and Mobile Bay. Permitted sources were responsible for the emission of 6,800 metric tons (7,500 tons) of particulate matter and 79,800 metric tons (88,000 tons) of sulfur dioxide during 1976. In addition, 4,500 metric tons (5,000 tons) of particulate matter emissions were attributable to population-related activities (e.g., automobiles, home heaters, fireplaces, open burning).

Ambient air quality in Mobile County has improved since 1972, due largely to the development and implementation of an Air Quality Maintenance Plan for the county. The Division of Air Pollution Control of the Mobile County Board of Health has monitored particulate matter levels at stations in the county since 1972. Since that time, the average of the annual geometric mean suspended particulate matter concentrations recorded at these stations declined by 33 percent. Ambient sulfur dioxide concentrations have been monitored less intensively; data are available only from a downtown Mobile station and from the Big Sniffer station in the Theodore Industrial Park. This information indicates that sulfur dioxide levels do not exceed standards in Mobile County and that conditions are substantially better in the Theodore Industrial Park area than in downtown Mobile.

The State of Alabama has reviewed Mobile County for attainment status with the National Ambient Air Quality Standards. Two areas, downtown Mobile and north of Mobile, have been determined the only areas of the county in non-attainment for particulate matter. The entire county has been determined to be in attainment for all the other standards except oxidants. The high oxidant levels measured in the county are believed to be primarily caused by automobile emissions and natural conditions, not industrial sources.

Air quality in the Theodore Industrial Park area currently is affected by emissions from two chemical plants, a metallurgical processing plant, a small refinery, and vehicular traffic. One Mobile County monitoring station for particulate matter is the Big Sniffer station on Rangeline Road near Deer River.

In addition, a three-station ambient monitoring network is currently in operation by Ideal Basic Industries to collect samples of suspended particulate matter. As shown in Figure 9, Station 1 is located north of the proposed plant site near Island Road, Station 2 is near Baker Sorrell Road south of the plant site, and Station 3 is on the eastern boundary of the Ideal Basic Industries property.

The sampling results from all four stations are presented in Table 2 and are displayed in Figure 10. The lower portion of the table shows the primary and secondary Ambient Air Quality Standards (AAQS). The secondary standards, which are more stringent, apply to all of Mobile County.

The data show that the air quality in the park area has been within the standards for particulate matter since the monitoring was initiated.

## RELEVANT PROJECT CHARACTERISTICS

During construction activities, fugitive dust emissions will be reduced by the use of water sprays on roads and other areas where heavy equipment is used. In addition, the main access road will be surfaced as soon as possible to reduce the dust potential.

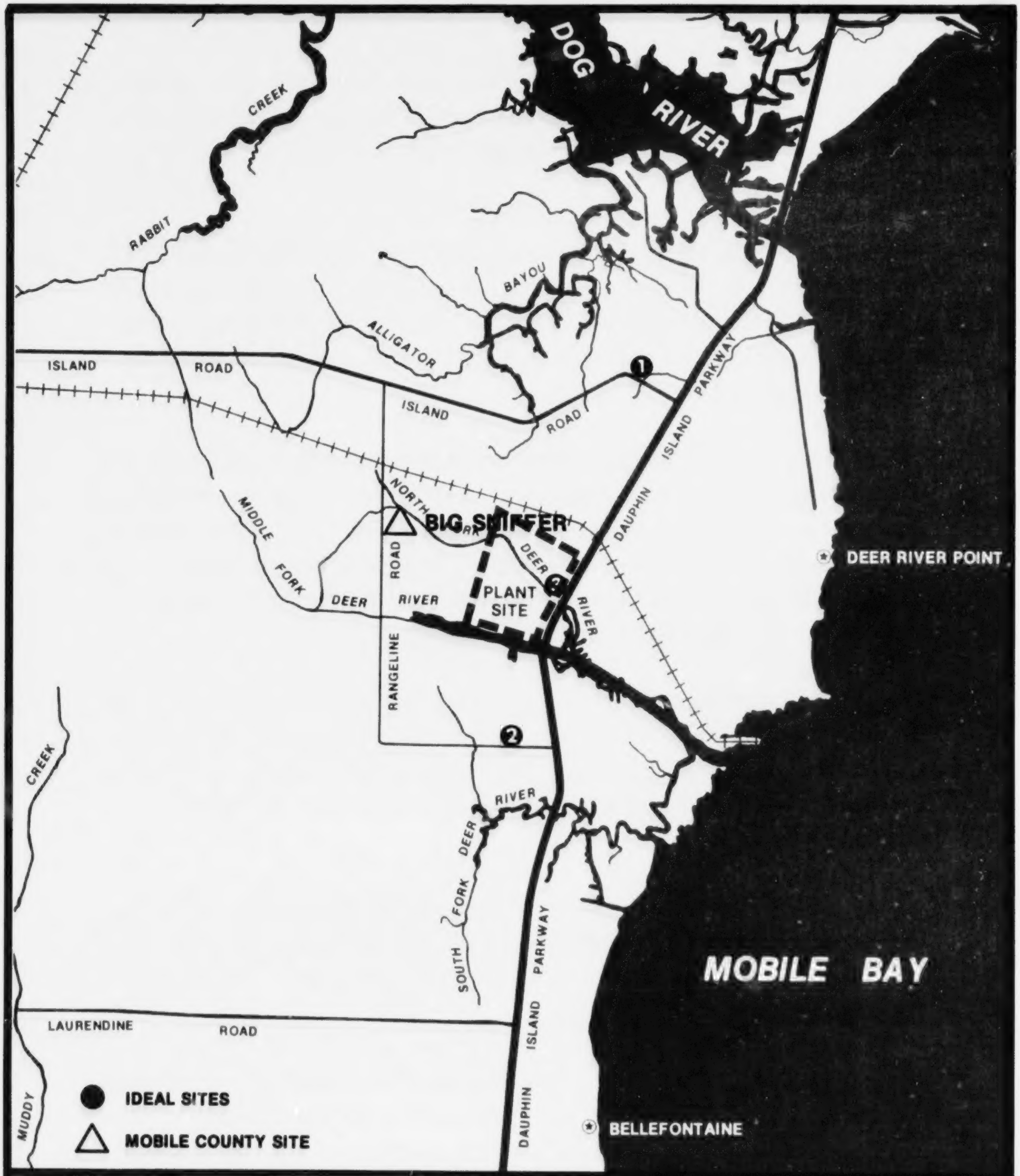
DOG RIVER
CREEK
RABBIT
BAYOU
ALLIGATOR
ISLAND ROAD
ISLAND ROAD
①
NORTH FORK
BIG SNIFFER
MIDDLE FORK DEER RIVER
RANGELINE ROAD
DEER
PLANT SITE
③
RIVER
DAUPHIN ISLAND PARKWAY
DEER RIVER POINT
②
RIVER
SOUTH FORK DEER
CREEK
DAUPHIN ISLAND PARKWAY
MOBILE BAY
LAURENDINE ROAD
MUDDY
BELLEFONTAINE
● IDEAL SITES
△ MOBILE COUNTY SITE

Figure 9
LOCATIONS OF AMBIENT MONITORING STATIONS IN THE VICINITY OF THE PROPOSED CEMENT PLANT, THEODORE, ALABAMA

0 0.5 1
SCALE IN KILOMETERS

N

SOURCE: Environmental Science and Engineering, Inc., 1977.

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Table 2. Summary of Existing Ambient Total Suspended Particulate Matter Levels (ug/m$^3$) in the Vicinity of the Proposed Ideal Basic Industries Plant Site, 1976 and 1977

| Station | Description | Time Period | Number of Observations | Geometric Mean | 24-Hour Max | 24-Hour Second Highest | Standard Geometric Deviation |
|---|---|---|---|---|---|---|---|
| Mobile County #11 | Big Sniffer | 1976 | 56 | 48 | 156 | 148 | N/A |
| | | 1977 | 50 | 43 | 161 | 90 | 1.63 |
| Ideal #1 | Nursery | 5/28/77 to 12/31/77 | 47* | 42 | 179 | 134 | 1.62 |
| Ideal #2 | Weaver's Residence | 5/28/77 to 12/31/77 | 47* | 35 | 93 | 89 | 1.55 |
| Ideal #3 | Lift Station | 5/28/77 to 12/31/77 | 47* | 31 | 94 | 90 | 1.62 |
| | | Primary Standard | | 75 | | 260 | |
| | | Secondary Standard | | 60 | | 150 | |

NA = Not Available.

*Sampling and analysis by Federal Reference Method (Code of Federal Regulations, Part 50, Appendix B). Continuous 24-hour sampling was conducted every third day from May 28 to August 31, and every sixth day thereafter.

Sources: Mobile County Board of Health, Division of Air Pollution Control, 1977.
Environmental Science and Engineering, Inc., 1977.

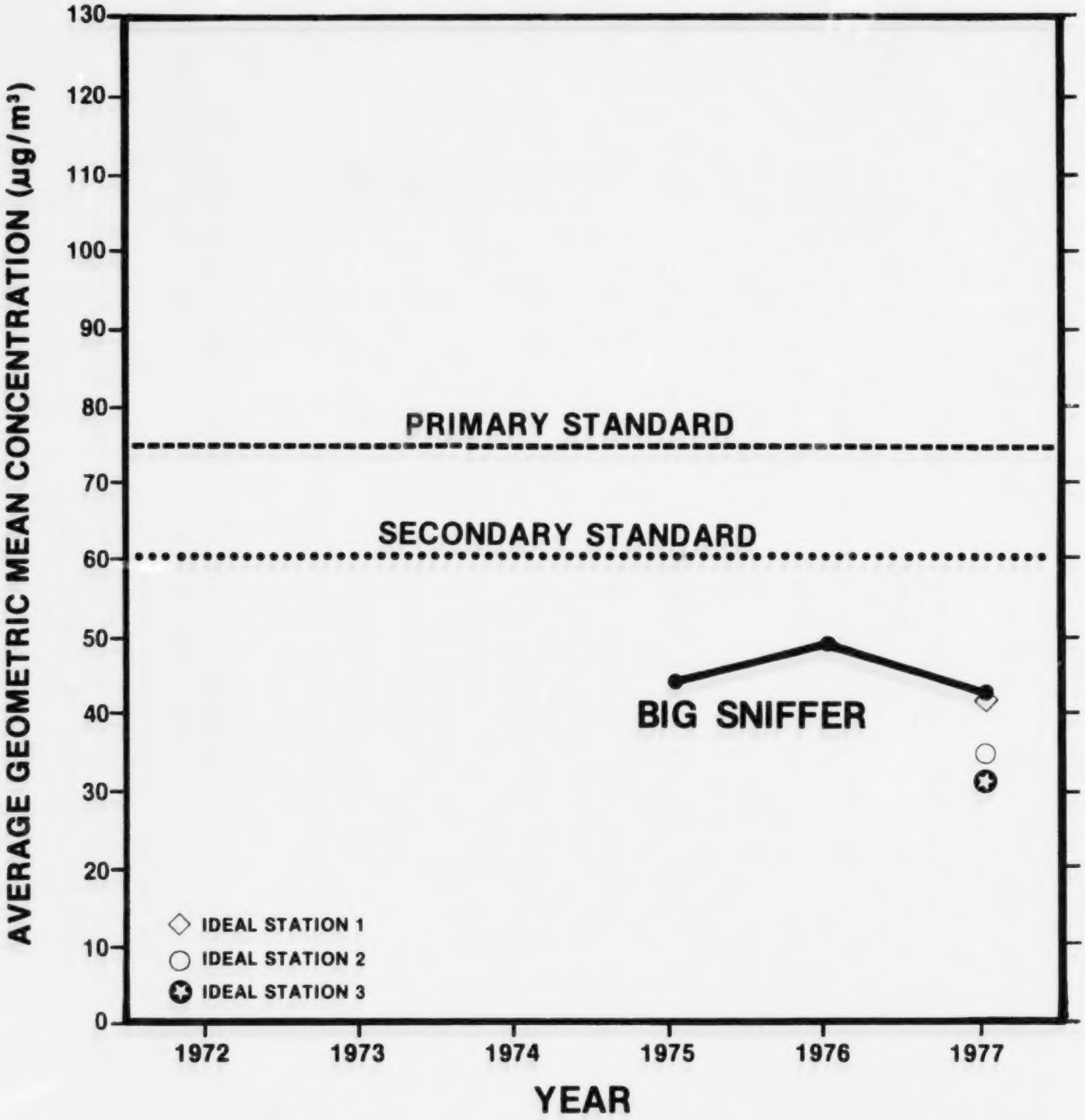

Figure 10
AMBIENT TOTAL SUSPENDED PARTICULATE MATTER CONCENTRATIONS AT STATIONS NEAR THE PROPOSED IDEAL CEMENT PLANT, MOBILE COUNTY, 1975-1977

SOURCE: Mobile County Board of Health, 1978.
Environmental Science and Engineering, Inc., 1978.

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The burning of land-clearing wastes will be performed with an air-blower type pit burner to reduce potential smoke emissions. Burning will be conducted under the conditions of the permit from the Mobile County Board of Health, and only during favorable dispersion conditions. Burning will be supervised at all times.

The design of the cement plant has inherent features which will reduce the potential for air pollution emissions. A suspension preheater requires use of a coal with no more than 1.5 percent sulfur content due to potential sulfate deposits forming and blocking flow of material and kiln exhaust gases. The use of the kiln/raw mill system and combined baghouse control provides less fuel usage and allows intimate contact of the sulfur dioxide in the exhaust with the alkaline raw materials. This contact could reduce the amount of sulfur dioxide emissions by an estimated 75 percent (U.S. EPA, Office of Air Quality Planning and Standards, 1975).

In addition, about 60 percent of the coal usually burned in the kiln will be fired in the precalciner. This system reduces the amount of air passing through the hot zone of the kiln and could act to reduce formation of nitrogen dioxide (Bauer, 1977).

The operation of the cement plant has the potential for emissions of particulate matter, sulfur dioxide, nitrogen oxides, hydrocarbons, and carbon monoxide, as shown in Table 3. The allowable quantities of particulate matter and sulfur dioxide shown are based upon EPA determination of use of the Best Available Control Technology (BACT) and compliance with the Prevention of Significant Deterioration (PSD) requirements.

The use of baghouses (fabric filter dust collectors) on all process exhausts and the use of 1.5 percent sulfur coal (by weight) have been determined to be BACT for this proposed project (see Permit and Approval section). Typically, a baghouse reduces the amount of particulate matter emitted by greater than 99 percent. The collected dust is

Table 3. Maximum Allowable Atmospheric Emissions from the Proposed Cement Manufacturing Plant for Particulate Matter and Sulfur Dioxide and Estimated Quantities of Other Pollutants: Nitrogen Oxides, Hydrocarbons, and Carbon Monoxide

| | Allowable | |
|---|---|---|
| Pollutant/Source | Grams/ Sec | (lbs/ hour) |
| Particulate Matter | | |
| Raw Mills/Kilns/Coolers* and Clay Dryer | 12.4 | 98 |
| Regrind Mill | 0.6 | 4 |
| Kiln/Cooler System** | 0.8 | 6 |
| Gypsum Storage and Unloading | 0.2 | 2 |
| Finish Mills | 2.6 | 21 |
| Clay Handling System | 0.2 | 2 |
| Coal Drying System | 2.9 | 23 |
| Shipping | | |
| Marine | 0.6 | 5 |
| Land | 0.3 | 2 |
| Packhouse | 0.3 | 3 |
| TOTAL | 20.9 | 166 |
| Sulfur Dioxide† | | |
| Raw Mill/Kiln/Clay Dryer | 249.4 | 1,980 |
| Coal Dryer | 22.7 | 180 |
| TOTAL | 272.1 | 2,160 |

Table 3. Maximum Allowable Atmospheric Emissions from the Proposed Cement Manufacturing Plant for Particulate Matter and Sulfur Dioxide and Estimated Quantities of Other Pollutants: Nitrogen Oxides, Hydrocarbons, and Carbon Monoxide (Continued, page 2 of 2)

| Pollutant/Source | Estimated Grams/ Sec | Estimated (lbs/ hour) |
|---|---|---|
| Nitrogen Oxides | | |
| Raw Mill/Kiln/Clay Dryer | 131.5 | 1,044 |
| Coal Dryer | 20.8 | 165 |
| TOTAL | 152.3 | 1,209 |
| Hydrocarbons | | |
| Raw Mill/Kiln/Clay Dryer | 0.3 | 3 |
| Coal Dryer | 0.1 | 1 |
| TOTAL | 0.4 | 4 |
| Carbon Monoxide | | |
| Raw Mill/Kiln/Clay Dryer | 1.1 | 9 |
| Coal Dryer | 0.4 | 3 |
| TOTAL | 1.5 | 12 |

*Kilns/coolers exhaust through raw mill.

†Calculated based upon 1.5 percent sulfur coal, 100 percent conversion of S to $SO_2$.

**Excluding kiln/cooler emissions (included in raw mill estimates) for raw mix and clinker exhausts.

Sources: H.K. Ferguson Associates, 1975.
Ideal Basic Industries, 1977.
Prevention of Significant Deterioration Application, Volumes I and II, 1977.

returned to the process and thereby a potential solid waste problem is eliminated.

The other criteria pollutants from the plant are not subject to the BACT and PSD requirements and are listed as estimated, not allowable. The hydrocarbons and carbon monoxide emissions are of small quantities, while the nitrogen oxide emissions are somewhat higher. The nitrogen oxides are a direct function of the amount of air used in combustion of the coal and the high temperatures involved. The nitrogen in the air (about 78 percent) is oxidized at high temperatures to form various types of nitrogen oxides. While direct control is not practical nor available, the process parameters of excess air and kiln temperature are to be maintained within the operational constraints required for the cement manufacturing process to act as a limiting factor to the formation of nitrogen oxides.

Another potential air emission is fugitive dust from the handling and storage of the raw materials. However, in order to reduce this emission potential, the barge unloading, conveyor transfer points, and storage piles will utilize water spray dust suppression systems on various sources of dust; some transfer points will be enclosed and vented through baghouses; and the coal, dried clay, iron ore, sand, and gypsum storage area will be covered. About 85 percent of the raw materials (the limestone and clay) have moisture contents of roughly 22 percent, which helps to suppress dust emissions from their handling and storage.

## IMPACTS

The majority of the fugitive dust generated during the construction phase of the proposed project should settle out close to the source (Kosky and Wanielista, 1975). The remaining dust could cause short-term but reversible impacts of a moderate magnitude, but the impact is expected to be of a low significance in the area. The emission of smoke due to burning of land-clearing debris will also contribute to air quality impacts. However, assuming the worst case of burning all the wastes rather than chipping or landfilling, the impact is expected to be of a low magnitude due to the use of the air-blower type pit burner and burning only during favorable dispersion conditions. Therefore, the significance is considered low, the duration very short, and the effect reversible. The adverse impact of burning is avoidable by using the other proposed methods of disposal: chipping and landfilling.

The impacts of permanent operations at the Ideal Basic Industries plant upon sulfur dioxide and suspended particulate matter concentrations have been analyzed through mathematical modeling of atmospheric dispersion processes. The projected changes in average annual concentrations of these pollutants due to the proposed plant are plotted in Figures 11 and 12.

The importance of air quality impacts resulting from the proposed facility can best be evaluated in terms of the Prevention of Significant Deterioration (PSD) review process. It involves demonstrating that the following two conditions will be met:

1. Ambient Air Quality Standards (AAQS) must not be exceeded at any location as a result of the proposed new source. These standards pertain to the following air quality measures:
   Sulfur dioxide
   (a) annual arithmetic mean concentration;
   (b) second highest 24-hour concentration in an annual period;
   (c) second highest 3-hour concentration in an annual period;
   Suspended particulate matter
   (a) annual geometric mean concentration;
   (b) second highest 24-hour concentration in an annual period.
2. Allowable federal increments in air pollutant concentrations must not be exceeded. These increments represent fixed limits upon the amounts by which the air quality measures listed above can change relative to 1974, the baseline year. All sources of air quality degradation are included, not just the proposed new

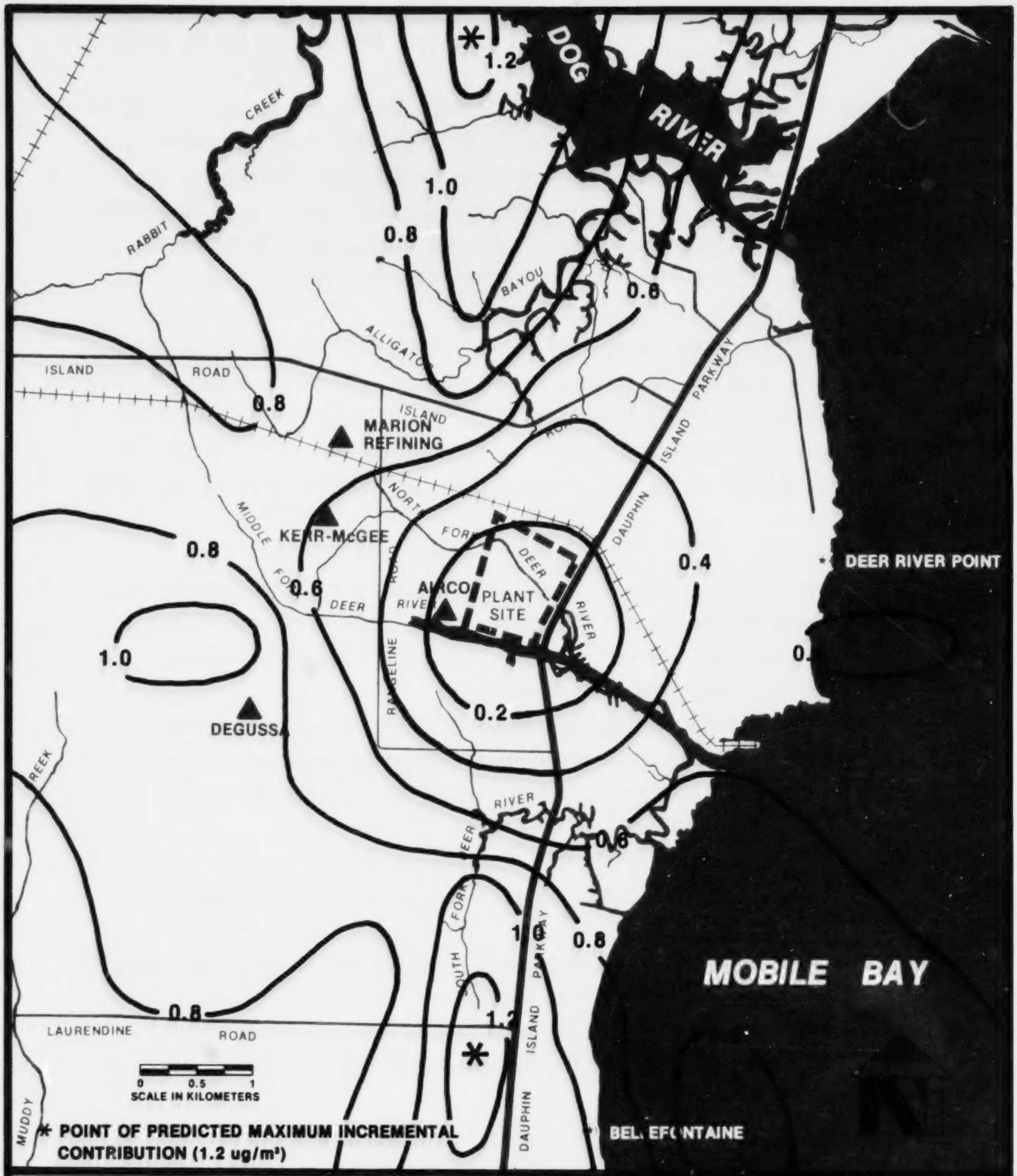
DOG RIVER
CREEK
RABBIT
1.2
1.0
0.8
0.8
BAYOU
ALLIGATOR
ISLAND ROAD
0.8
ISLAND ROAD
MARION REFINING
NORTH FORK DEER RIVER
MIDDLE FORK DEER RIVER
KERR-McGEE
0.8
0.6
AIRCO
PLANT SITE
RIVER
RANGELINE ROAD
DAUPHIN ISLAND PARKWAY
0.4
DEER RIVER POINT
1.0
0.2
DEGUSSA
CREEK
RIVER
SOUTH FORK DEER
0.6
1.0
0.8
MOBILE BAY
1.2
0.8
LAURENDINE ROAD
0 0.5 1
SCALE IN KILOMETERS
MUDDY
DAUPHIN ISLAND PARKWAY
BELLEFONTAINE
* POINT OF PREDICTED MAXIMUM INCREMENTAL CONTRIBUTION (1.2 ug/m³)

**Figure 11**

**ISOPLETHS OF THE INCREMENTAL CONTRIBUTIONS TO PREDICTED ANNUAL AVERAGE GROUND-LEVEL SULFUR DIOXIDE CONCENTRATIONS (ug/m³), PROPOSED CEMENT PLANT ONLY, THEODORE, ALABAMA, 1980**

**SOURCE:** Environmental Science and Engineering, Inc., 1977.

REGION IV
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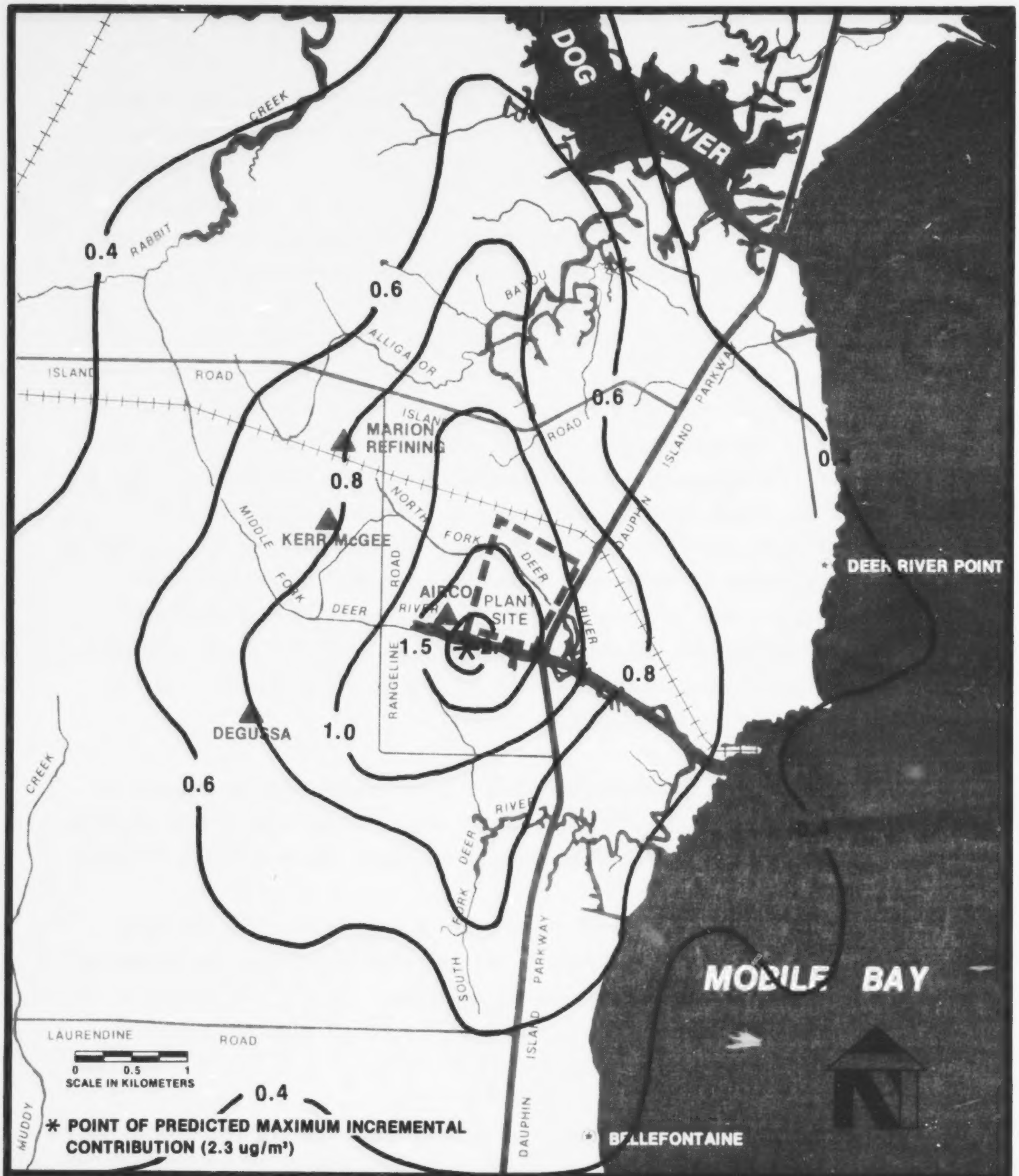
STATEMENT FOR IDEAL BASIC INDUSTRIES

**PROPOSED CEMENT MANUFACTURING**
**PLANT THEODORE INDUSTRIAL PARK**
**MOBILE, ALABAMA**


DOG RIVER
CREEK
RABBIT
0.4
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ISLAND
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ISLAND PARKWAY
MARION REFINING
0.8
NORTH
FORK
DEER
MIDDLE
FORK
KERR-McGEE
DAUPHIN
DEER RIVER POINT
ROAD
AIRCO
PLANT SITE
DEER
RIVER
RIVER
1.5
RANGELINE
0.8
DEGUSSA
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0.6
CREEK
RIVER
DEER
FORK
SOUTH
PARKWAY
ISLAND
DAUPHIN
MOBILE BAY
N
LAURENDINE
ROAD
0
0.5
1
SCALE IN KILOMETERS
0.4
MUDDY
* POINT OF PREDICTED MAXIMUM INCREMENTAL CONTRIBUTION (2.3 ug/m³)
BELLEFONTAINE

Figure 12
ISOPLETHS OF THE INCREMENTAL CONTRIBUTIONS TO PREDICTED ANNUAL AVERAGE GROUND-LEVEL SUSPENDED PARTICULATE MATTER CONCENTRATIONS (ug/$m^3$), PROPOSED CEMENT PLANT, THEODORE, ALABAMA, 1980

SOURCE: Environmental Science and Engineering, Inc., 1977.

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**PROPOSED CEMENT MANUFACTURING PLANT THEODORE INDUSTRIAL PARK MOBILE, ALABAMA**

> source. As in the case of AAQS, the new source must be shown not to violate the allowable increment at any location, under expected worst-case meteorological conditions. The purpose of the increments is to prevent significant air quality deterioration in areas where the 1974 ambient concentrations were substantially below the applicable standards.

The forecast year used in the present case is 1980, which represents the start-up of the cement plant. The estimated baseline conditions reflect the actual air pollutant emissions that occurred in 1974, whereas the forecasts for 1980 pertain to a hypothetical situation in which all sources are emitting at the maximum allowable or permitted rates (except for a few cases in which this would not be theoretically possible). The cement plant emissions used in the modeling were based on an alternative process design no longer viable and were roughly 10 percent greater than the totals shown in Table 3. In addition, the sulfur dioxide emissions do not reflect any reduction because of contact with the alkaline dust. These factors mean that the results of the modeling overestimate the plant's contribution to ambient levels.

In order to determine whether the PSD requirements will be met and to show the maximum impact of the cement plant, it is necessary to consider ambient air quality for three types of receptor concentrations for each standard:

1. Maximum pollutant concentration from all sources in 1980;
2. Maximum degradation in air pollutant concentrations between 1974 and 1980 due to all sources;
3. The maximum contributions of the cement plant to pollutant concentrations in 1980.

For each air quality measure, the maximum concentration represents the worst case in terms of compliance with Ambient Air Quality standards, the maximum degradation is used for determining compliance with allowable federal PSD increments, and the maximum contribution of the cement plant relates to its worst-case impact.

A summary of the PSD evaluation results for the proposed Ideal Basic Industries project is presented in Table 4. The air quality concentrations shown have been estimated by mathematical modeling based on meteorological conditions known to have occurred. In comparing these numbers, it should be remembered that the maximum values for the air quality parameters generally occur at different locations, depending on specific meteorological conditions relative to the desired standard. The 24-hour and 3-hour concentrations are actually the highest (maximum) of all the second highest concentrations predicted for the five years of meteorological conditions used. This highest, second highest concept is needed in order to assess compliance with the ambient air quality standards that cannot be exceeded more than once per year.

Each of the maximum values projected to occur in 1980 with the proposed project in operation (first row) is less than the respective air quality standard, shown at the bottom of the table. This indicates that the standards will not be exceeded at any location affected by the proposed plant. As shown in the last column, the 24-hour suspended particulate standard will nearly be exceeded. However, this condition exists only in a very localized area near a present emission source (unrelated to the Ideal project) and will not be affected by the emissions from the cement plant under the meteorological conditions represented.

The central portion of Table 4 deals with the locations of maximum air quality degradation, or the change between 1974 and 1980. The largest degradation should occur with the sulfur dioxide highest, second highest 24-hour standard (second column) since only 12 percent of the PSD increment should remain. The cement plant will use 31 percent of the increment, the other portion will be consumed by other sources in the area.

The maximum usage of a PSD increment by the cement plant should occur with respect to the highest, second highest 24-hour suspended particulate standard (last column). About 62 percent of the PSD increment will be used by the plant. In all cases shown in Table 4, maximum

Table 4. Summary of PSD Evaluation Results for the Proposed Ideal Basic Industries Cement Manufacturing Plant

| | Ambient Ground-Level Concentration (ug/m$^3$) | | | | |
|---|---|---|---|---|---|
| | Sulfur Dioxide | | | Suspended Particulates | |
| Emission Situation | Annual Arithmetic Mean | Second Highest 24-Hour Period | Second Highest 3-Hour Period | Annual Geometric Mean | Second Highest 24-Hour Period |
| POINTS OF MAXIMUM CONCENTRATION | | | | | |
| 1980 With Ideal * | 20 | 90 | 315 | 46 | 149 |
| Percent of Standard | 25% | 25% | 24% | 77% | 99% |
| Ideal Impact(Contribution) | <1 | 28 | 146 | 2 | 0 |
| POINTS OF MAXIMUM DEGRADATION | | | | | |
| 1974 Baseline | 8 | 10 | 32 | 44 | 45 |
| 1980 With Ideal † | 20 | 90 | 315 | 44 | 68 |
| Degradation | 12 | 80 | 283 | 0 | 23 |
| Increment Remaining | 8 | 11 | 229 | 19 | 14 |
| Percent of Increment Remaining | 40% | 12% | 45% | 100% | 38% |
| Ideal Impact(Contribution) | <1 | 28 | 146 | <1 | 21 |
| Percent of Increment | <5% | 31% | 28% | <5% | 57% |
| MAXIMUM IMPACT OF IDEAL ** | | | | | |
| Ideal Impact | 1.2 | 38 | 199 | 2 | 23 |
| Percent of Increment | 6% | 42% | 39% | 12% | 62% |
| Increment Remaining | 15 | 53 | <313 | 21 | 26 |
| Allowable Federal Increment | 20 | 91 | 512 | 19 | 37 |
| Federal Primary Standard | 80 | 365 | NA | 75 | 260 |
| Federal Secondary Standard | NA | NA | 1300 | 60 | 150 |

* Concentrations from all sources at points of maximum impact from all sources combined.

† Concentrations from all sources at points of maximum degradation since 1974.

** Concentrations from Ideal at points of maximum Ideal effect.

Source: Environmental Science and Engineering, Inc., 1977.

degradation since 1974 will not occur at the same locations as the maximum impact of the cement plant.

The emissions from the sources modeled may be somewhat conservative because of the use of permitted emission rates that are typically higher than actual rates, and the cement plant's sulfur dioxide emissions should be substantially lower than the values used. In addition, for each meteorological condition, the concentrations everywhere else will be lower than the values at the points described in Table 4.

The extent to which the proposed cement plant might limit allowable emissions by other new sources (also subject to PSD review) and thereby might influence future industrial growth could be a serious community impact, since much of the land near the Ideal Basic Industries plant site is intended for industrial development. The detailed air quality forecasts indicate that the proposed project will not place significant limitations upon future growth.

The growth limitation issue relates primarily to short-term air quality increments, since the proposed project does not place significant stress upon annual increments or annual ambient air quality standards. An important characteristic of short-term air quality measures is that the maximum values tend to involve highly specific combinations of emission sources, geographic areas, and meteorological conditions. As an example, the point of maximum consumption of the 24-hour sulfur dioxide increment (88 percent total consumption, 31 percent due to Ideal) is a location northwest of the proposed plant site near Island Road. A high consumption of the 24-hour suspended particulate matter increment (54 percent total consumption, 22 percent due to Ideal) also occurs near this point. The reason is that this location is aligned with two existing emission sources as well as Ideal, so that winds from the southeast can cause the location to be impacted by all three sources. However, there are few sites where an industry could locate an additional emission source that would contribute to this impact. The critical areas for the 24-hour particulate increment (where total utilization by all sources in 1980 will exceed 50 percent) are situated close to the plant site, except for the location discussed in the previous paragraph. The suspended particulate matter increment probably will not be subject to additional stress in these areas. In the case of the 24-hour sulfur dioxide increment, all of the high-utilization areas other than the above-mentioned location will be affected only slightly by the proposed cement plant.

Therefore, the utilization of the PSD increments by the proposed plant is considered to be of a moderate magnitude, but of low overall significance to the future growth of the industrial park. The impact is long-term and reversible. The PSD review has been completed and the "Authority to Construct" has been issued for the cement plant (see the Permit and Approval section of this document).

The impact of the particulate matter and sulfur dioxide on the ambient air quality levels emissions will be of a low magnitude based on the modeling analysis performed. The significance is also rated low because of the small area affected; impacts will be long-term, but reversible.

Since the estimated quantities of hydrocarbons, carbon monoxide, and fugitive dust are very low, impacts should be negligible. Modeling of the nitrogen oxide emissions determined that the levels will be well below the National Ambient Air Quality Standards. Therefore, the magnitude of the nitrogen oxide concentrations is considered low and the overall significance in the area is also considered low. The related impact is long-term and reversible.

## MITIGATING MEASURES

Watering of exposed areas will be employed as an environmental safeguard to lessen fugitive dust impacts during the construction phase. Some possible mitigating measures would be:

1. Use of chemical soil stabilizers;
2. Adoption of techniques to reduce wind speeds across exposed surfaces; and
3. Paving of construction roads.

Over 100 chemical products can be used as soil stabilizers, some of which are applied to the land surface and some of which are incorporated into the soil. The major disadvantages of chemical stabilizers are the expense involved and the fact that traffic and other activities can break down the stabilizing layer. This control tends to be effective only for inactive areas, which typically have small emission rates relative to active areas.

Reductions in wind speed across exposed surfaces, as a means of minimizing wind-entrained dust, can be achieved by enclosures, coverings, or placement of tall vegetation. Such control measures ordinarily are not feasible for construction projects of short duration, however. The option of paving all construction roads, rather than just the principal access road, could reduce fugitive dust emissions significantly. This approach is considered impractical because movements of heavy machinery and equipment would break up the road surfaces and thus necessitate frequent repaving.

With reference to burning the portion of land-clearing wastes not chipped or taken to a landfill, there are no mitigating actions that could be performed to lessen the projected impacts.

The environmental safeguards that will be employed to control emissions of particulate matter from permanent operations at the Ideal Basic Industries plant will account for approximately $20 million of the overall project cost. The use of baghouse dust collectors to control stack emissions, which is considered BACT, will reduce emission rates to below the allowable rates. It is not economically feasible, nor technically practical, to control stack emissions of particulate matter to a greater degree.

Impacts involving sulfur dioxide could be mitigated by the use of lower sulfur coal; however, the resulting decrease would be slight given the inherent reduction by contact with the alkaline raw materials in the proposed process.

Impacts associated with pollutant emissions from the kiln/cooler/raw mill system will be mitigated by the use of stacks [90 meters (300 feet) high] for release of the exhaust gases. These high stacks will facilitate dispersion and dilution of emissions before the effluent plume reaches ground level and also minimize the possibility of plume downwash. As a mitigative measure, higher stacks could be utilized for other sources (along with the continued use of baghouse control). This approach has not been considered practical for all sources because the emission rates of most sources are too small to justify the use of higher stacks.

## ALTERNATIVES

The major project alternatives affecting air quality are:

1. The no-action alternative, under which the proposed project would not be built;
2. The use of a wet rather than a dry cement manufacturing process; and
3. The use of air emission controls other than baghouses.

Future air quality in the absence of the proposed Ideal Basic Industries project would be dependent upon general industrial development and the alternative use of the Ideal property. The air quality modeling study suggests that ambient air concentrations will tend to increase in the Theodore Industrial Park area over the next 15 years, but that air quality standards and allowable increments will not become seriously limiting on future growth. The factors responsible are the high levels of emission control required for new sources and the relatively low spatial density of industrial development in the industrial park area.

An alternative which would affect the operating characteristics of the proposed cement plant would be the substitution of a conventional wet process for the proposed dry process plant. In a wet process plant, the raw materials are mixed with water before grinding to form a slurry, which is then fed to the kiln. Wet and dry process plants cost about the same to build and have similar emissions of particulate matter (U.S. EPA, Office of Air Quality Planning and Standards, 1975). However, overall fuel usage per ton of clinker produced is approximately twice as great for a wet plant as for a dry plant.

Higher fuel usage with the wet plant would tend to result in greater emissions of sulfur dioxide. The higher exhaust gas volumes with the wet plant would also contribute to higher air pollution control costs.

A wet plant would have the potential for greater wastewater discharges and more maintenance problems due to its use of the slurry kiln feed. Therefore, a wet process plant, although a practical alternative to the dry process, would be less desirable because of energy, environmental, and maintenance factors.

Several alternatives to baghouse technology for control of pollutant emissions from cement manufacturing include cyclones, wet scrubbers, and electrostatic precipitators. Multicyclones are effective in removing the larger particles contained in gas streams, but do not capture the finer dusts. Therefore, cyclones are usually limited to the role of pretreatment devices. Wet scrubbing devices can achieve a high degree of particulate control, but involve wastewater problems, high energy requirements, high operating costs, and waste products that are difficult to recycle.

Electrostatic precipitators would be economically feasible only for the large volume exhaust gas streams of the kiln/cooler/raw mill system. Their potential shortcomings relative to baghouses include:

1. Explosion potential because of combustible gases and coal dust in the gas stream; and
2. The need for conditioning of gases prior to entry into the precipitator.

Therefore, baghouses were chosen over the other devices because of their higher collection efficiencies and lack of comparable operating problems.

An alternative to the use of water sprays on sources of fugitive dust, such as conveyor drop and transfer points, would be enclosing the location and venting displaced air to a baghouse. The difference in the levels of emissions does not warrant the use of this alternative action.

# NOISE

## BASELINE

### INTRODUCTION

Environmental noise commonly is measured in decibels (dBA) on a scale that matches the receptive characteristics of the human ear (the A-scale). Since sound levels tend to vary from moment to moment, various statistical measures are needed to characterize overall noise conditions.

The $L_{eq(24)}$ represents the equivalent sound level equal in cumulative energy to all time-varying noise produced during a 24-hour period. The $L_{(dn)}$ is the equivalent sound level for day and night based upon the $L_{eq(24)}$, but is biased high to account for greater potential noise sensitivity during the night.

The U.S. EPA has suggested noise levels requisite to protect the public against hearing loss or activity interference (EPA, 1974). These values are for long-term exposures and consider the cumulative effects of noise, but are not intended to be used as standards nor discrete numbers. The outdoor annual energy equivalent sound levels are as follows:

1. 55 dBA ($L_{dn}$)--could interfere with normal outdoor activities, such as speech communication at about 3 meters (10 feet). The level is suggested for residential areas, but is typically exceeded in metropolitan areas of the U.S.

2. 70 dBA ($L_{eq24}$)--could cause a hearing loss in 96 percent of the population by 40 years of continual exposure.

## PRESENT CONDITIONS

Baseline noise monitoring was conducted at 12 stations near the proposed Ideal Basic Industries plant site. Three stations were located on the Ideal property; the other nine stations were located at noise-sensitive sites such as schools and residences, and at strategic points near noise sources. Traffic was the dominant noise source in the area. Other sources that were important at some stations included two manufacturing plants and a drydock area on the barge canal. The highest noise levels were measured at two stations on Island Road, one station on Rangeline Road, and one station on the south bank of the barge canal. These stations had $L_{eq(24)}$ values between 59 dBA and 66 dBA, and $L_{dn}$ values ranging from 65 dBA to 72 dBA. The lowest equivalent sound levels were at the Dauphin Island Parkway crossing of North Fork Deer River. These levels were 48 dBA ($L_{dn}$) and 45 dBA [$L_{eq(24)}$].

## RELEVANT PROJECT CHARACTERISTICS

During construction of the proposed Ideal Basic Industries manufacturing plant, noise will be generated by the heavy equipment used for earth-moving, lifting, welding, paving, pile driving, and transportation. At the time of peak construction activity, there will be a variety of heavy equipment on-site.

Based on estimates of the number of pieces of construction equipment to be used at anytime, a worst-case situation was modeled for the area. Figure 13 shows the expected equivalent sound level contours [$L_{(dn)}$] during the most active three-month period of construction. These levels are from only the plant activities and do not include background levels. [It is important to remember that sound levels are not directly cumulative. Adding 55 dBA to a background of 55 dBA (doubling the sound energy) will produce a level of 58 dBA. In addition, adding 75 dBA to a background of 55 dBA will produce a level of approximately 75 dBA]. Therefore, a background level should not substantially increase noise levels from those shown in Figure 13 unless the background level is greater than the level shown for the cement plant.

During permanent operations of the cement plant, noise will be generated by process equipment, raw material handling, finished product handling, and vehicular traffic. Noise from process equipment will be generated continuously during operating hours, whereas noise from employee traffic, waterway traffic, haul trucks, and rail operations will be produced on an intermittent basis.

In order to obtain a proper understanding of the sound levels that could be generated at the proposed plant, a noise survey has been performed at an existing cement plant. This facility utilizes a dry process similar to the Ideal Basic Industries plant, but has only one-third the production capacity. Noise levels were recorded at 20 locations around the plant in order to gain information on the noise effects typically associated with dry process cement manufacturing.

The noise information for the other dry process plant was used to forecast the effects of the Ideal Basic Industries operation by assuming that the sound power levels from the Ideal facility would be roughly three times as great. A number of adjustments were made for factors such as topography and vegetation. The results are depicted in Figure 14, which shows the sound level contours ($L_{dn}$) resulting from just the operation of the proposed cement plant. The sphere of influence is slightly smaller than that associated with the construction of the cement plant.

## IMPACTS

In relation to the EPA suggested equivalent sound levels during construction, there should be about 75 existing residences inside the 55 dBA contour shown in Figure 13. By 1980, the number of residences affected should be about 60 due to property takings for the ship channel project. Within this zone of influence, the construction activities will increase sound levels to equal to, or greater than, the 55 dBA ($L_{(dn)}$) suggested for interference with outdoor speech communication

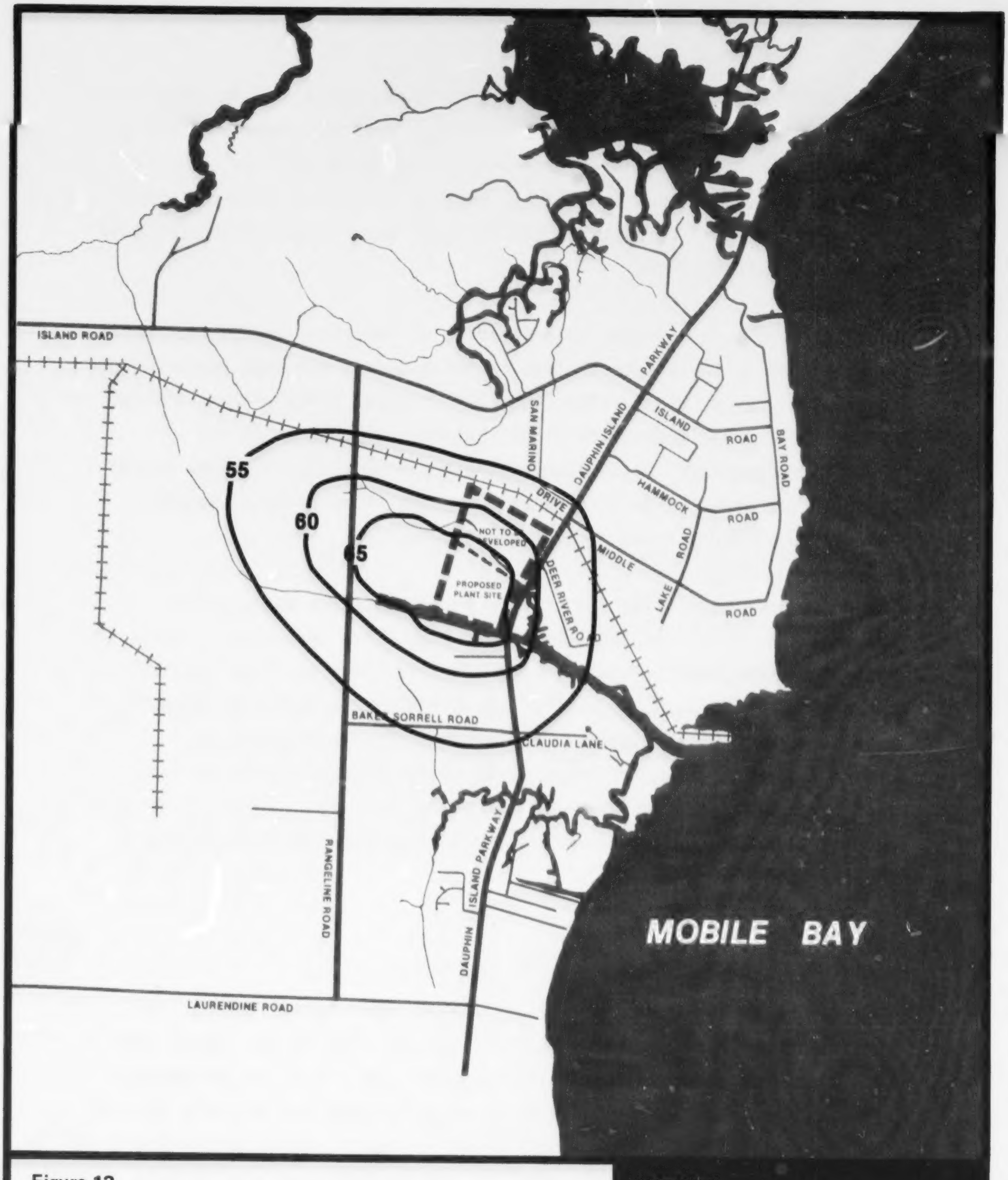
ISLAND ROAD
SAN MARINO
DAUPHIN ISLAND PARKWAY
ISLAND ROAD
BAY ROAD
HAMMOCK ROAD
DRIVE
MIDDLE
LAKE ROAD
ROAD
DEER RIVER ROAD
55
60
65
NOT TO BE DEVELOPED
PROPOSED PLANT SITE
BAKER SORRELL ROAD
CLAUDIA LANE
RANGELINE ROAD
DAUPHIN ISLAND PARKWAY
LAURENDINE ROAD
MOBILE BAY
0
0.5
1
SCALE IN KILOMETERS

Figure 13

EQUAL SOUND LEVEL ($L_{dn}$) CONTOURS DUE TO WORST CASE CONSTRUCTION ACTIVITIES FROM THE PROPOSED PLANT ONLY

SOURCE: Environmental Science and Engineering, Inc., 1977.

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at about 3 meters (10 feet). As mentioned previously, these levels are similar to levels in typical metropolitan residential areas in the United States.

Due to the expected levels, the noise impact from plant construction is considered of moderate magnitude, short-term, and reversible. The significance in the area is rated low because:

1. Most construction activities will occur only during daylight hours, which should approximately coincide with normal working and school hours.
2. The projections are for the worst 3-month period out of the 30-month construction schedule. At all other times the equivalent sound levels will be lower.
3. The noise levels from plant construction outside of this zone of influence (55 dBA), although probably perceptible, should not disturb outdoor communication or activities.
4. The levels suggested by EPA are for outdoor activities; the projected levels will be significantly attenuated (lower) inside residences.

During the initial plant operations (1981), there should be about 20 residences within the 55 dBA zone of influence shown in Figure 14. This is a decrease of 12 residences from existing conditions and represents the effect of the property takings for the right-of-way of the ship channel. By 1992, it is expected that another 14 residences will be sold for industrial or commercial land use (see Land Use section).

The noise impact from operating the cement plant is considered of moderate magnitude, long-term, and reversible. The significance is rated low because of the small number of residences to be affected as compared to the total number of residences in the area.

The noise impact should be less than that shown on the eastern side of the plant because after the modeling was performed, the 20-meter

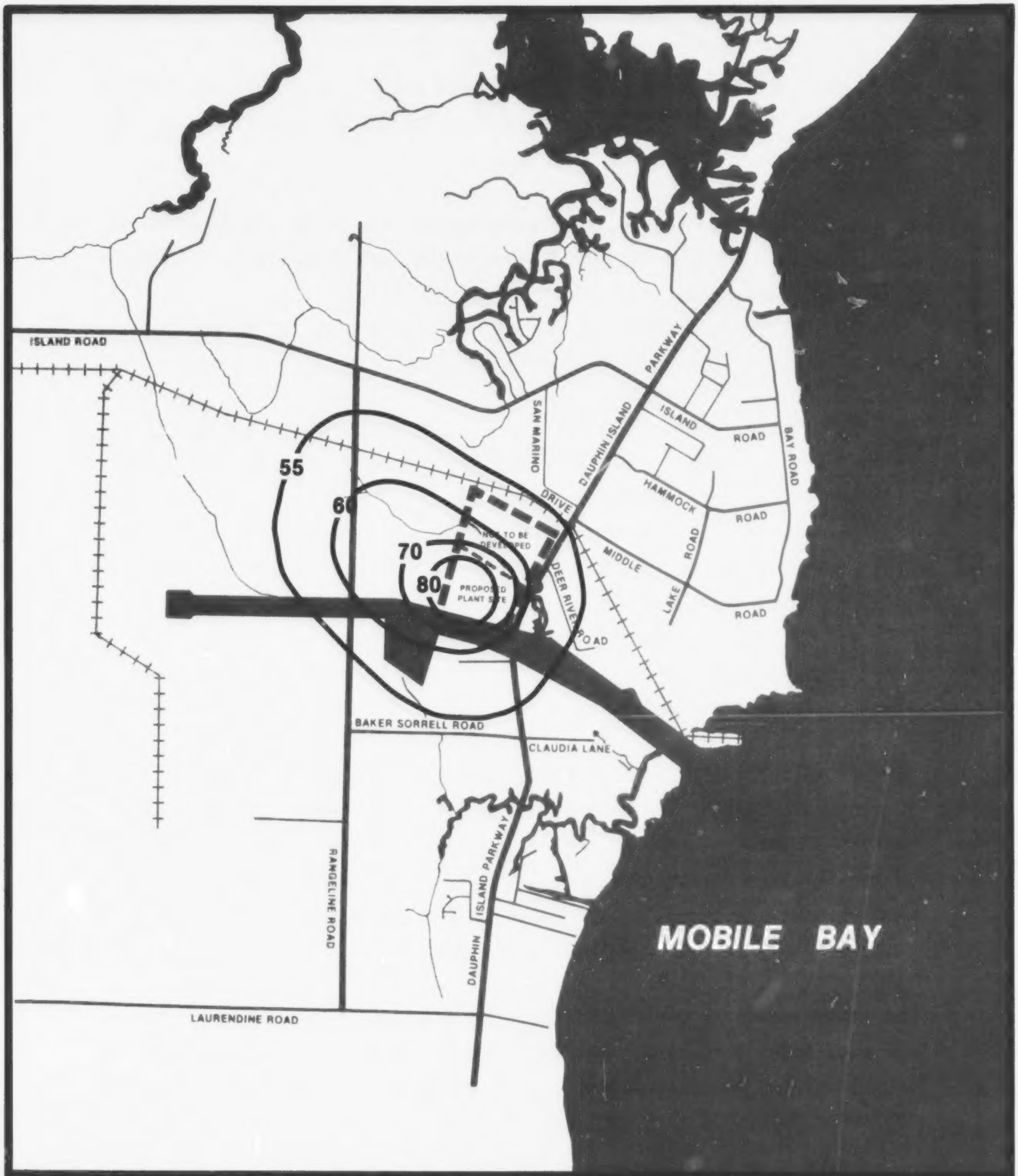
ISLAND ROAD
SAN MARINO
DRIVE
DAUPHIN ISLAND PARKWAY
ISLAND
ROAD
BAY ROAD
HAMMOCK
ROAD
MIDDLE
ROAD
LAKE ROAD
ROAD
DEER RIVER ROAD
55
60
70
80
NOT TO BE DEVELOPED
PROPOSED PLANT SITE
BAKER SORRELL ROAD
CLAUDIA LANE
RANGELINE ROAD
DAUPHIN ISLAND PARKWAY
MOBILE BAY
LAURENDINE ROAD

**Figure 14**

**EQUAL SOUND LEVEL ($L_{dn}$) CONTOURS DUE TO PLANT OPERATIONS ONLY**

0 0.5 1
SCALE IN KILOMETERS

N

SOURCE: Environmental Science and Engineering, Inc., 1977.

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(65-foot) high dead storage pile of limestone was added to the plant layout. This pile will attenuate the noise generated from most of the ground-level facilities.

## MITIGATING MEASURES

In order to minimize noise impacts during construction, equipment with effective noise suppression devices complying with the Walsh-Healy Act and Occupational Safety and Health Administration (OSHA) regulations will be used. Construction activity will be limited to daylight hours as much as possible. During permanent operations at the plant, the following environmental safeguards will apply:

1. Most of the process equipment (with the exception of portions of the kilns as required for heat dissipation) will be enclosed within buildings.
2. Noise impacts will be lessened by the presence of vegetation, particularly the vegetated buffer strip along the eastern property boundary.
3. The access road will be located away from residential areas.
4. The 20-meter (65-foot) high dead storage pile of limestone will be located along the eastern edge of the facility.

A noise study will be performed by Ideal Basic Industries in order to determine appropriate measures and requirements regarding enclosures, barriers, and machinery arrangement.

Additional actions could be taken to help mitigate the noise impacts. First, noise suppression equipment could be installed on the various fans used with the baghouses for controlling air emissions. Second, all process components and/or the entire facility could be completely enclosed.

The aspects of noise suppression for fans could be investigated during the proposed noise study. However, completely enclosing the facility would be impractical for a plant of this size.

## ALTERNATIVES

The no-action alternative indicates that noise levels in the Theodore Industrial Park area will increase in the future whether or not the proposed cement plant is constructed. The major factors responsible for long-term changes in noise levels will be: (1) increased highway traffic; (2) larger volumes of waterway traffic; and (3) new industrial development. An additional factor that will be very important in the short-term is the construction of the Theodore Ship Channel, which will be accomplished by deep dredging along the route of the present barge canal.

Future noise levels without the Ideal Basic Industries project have been modeled mathematically for the year 1992. It was not possible to take into account other new industrial development.

As would be expected with increased road and channel traffic, the equivalent noise levels should increase along Rangeline Road [$L_{(dn)}$ of 81 dBA and $L_{eq(24)}$ of 75 dBA], Island Road [$L_{(dn)}$ of 71 dBA and $L_{eq(24)}$ of 68 dBA], and the ship channel [$L_{(dn)}$ of 64 dBA and $L_{eq(24)}$ of 57 dBA]. No change from 1977 levels is projected for the location of the crossing of the Dauphin Island Parkway and North Fork Deer River.

The 1992 baseline noise projections have included estimates of highway traffic impact based upon a mathematical model developed by the Highway Research Board (Gordon, et al., 1971). Noise effects due to waterway traffic on the ship channel have been estimated using information contained in the environmental impact assessment of the ship channel project (USC, Incorporated/Consulting Engineers, 1974). The modeling has assumed that waterway traffic will amount to ten round trips of tug and tow per day. In summary, the projected 1992 noise levels without the cement plant are higher than present levels in all areas near the ship channel and in areas adjacent to Rangeline Road and Island Road. Little change is expected elsewhere.

The plant layout has been modified for various process and environmental reasons. The present facility plan utilizes a physical barrier (dead storage pile of limestone) and natural buffers (greenbelt to the east, natural vegetation to the north) to reduce noise impacts on the surrounding area.

An alternative to this action would be to relocate the main facilities as far west as possible and to place noise barriers to the north, south, and east. This arrangement would move the noise sources farther away from the residential areas and possibly attenuate the noise more effectively.

The proposed plant layout with its natural buffers does not differ greatly from this alternative, but is more desirable as a practical balance of process requirements and ecological effects. However, the design consultants are continuing their study to determine noise reduction effects of layout and equipment changes. If specific types of equipment are determined to generate lower noise levels, have practical operating requirements, and are cost-effective, they will be used.

## SOLID WASTE

### BASELINE CONDITIONS

Most solid waste generated at the Ideal Basic Industries plant site will be disposed in an approved off-site landfill. Therefore, a field investigation of landfills in Mobile County has been conducted to survey present conditions and establish the availability of landfill capacity in 1980. The three principal landfills in Mobile County which operate under the supervision of state and local agencies are the Irvington, Kushla, and Mobile sites.

The closest landfill to Theodore Industrial Park is the Irvington site which is owned by Mobile County and operated under contract to Mobile Waste Company. A trench method of disposal is utilized, in which a dragline digs a trench in the clay soil and the wastes are deposited on a 3 to 1 slope. Each trench is about 15 meters (50 feet) wide and 23 meters (75 feet) long. The wastes are compacted and covered each day with a layer of clay.

The wastes accepted at the Irvington Landfill are restricted to garbage, non-bulk refuse, industrial containers, etc. Bulky items are not acceptable unless they are cut to a size that allows for easy compaction by a dozer. The remaining life of the landfill is estimated as greater than 15 years.

The Kushla Landfill is also owned by Mobile County and operated by Mobile Waste Company. This site is approximately one-third the size of the Irvington Landfill and has a relatively short remaining life.

At the City of Mobile Landfill, located at the end of Hickory Street, a lift method of waste disposal is used. This landfill handles only non-putrescible wastes (i.e., wastes not containing decomposable organics). The life of the Mobile landfill is presently estimated to be 5 years, based on the assumption that only several more lifts are practical for the site.

An additional site which could be utilized is an old clay quarry owned by Ideal and located about 32 kilometers (20 miles) north of Mobile. A pit is currently being filled with waste from Ideal's existing wet process cement plant in Mobile. The pit is imbedded in impermeable clays and there is sufficient land to continue such operations for at least 15 years.

Mobile County does not have a municipal incinerator or resource recovery facility, and such facilities do not appear likely in the near future. However, recent state and federal legislation dealing with the disposal of hazardous and toxic substances may lead to the development of special regional facilities (e.g., sealed or leachate-treated landfills, or high temperature incinerators) in Mobile County or elsewhere. The Mobile County Board of Health issues permits for burning of wastes from land clearing, with provisions governing air pollution emissions.

## RELEVANT PROJECT CHARACTERISTICS

The construction phase of the proposed Ideal Basic Industries project will generate three major types of solid waste: debris from land clearing, dredged soil materials, and general construction wastes.

Approximately 20 hectares (50 acres) of modified longleaf pine forest will be cleared during the first three months of construction. Three types of disposal methods are under consideration for partial or exclusive use: chipping for mulch, controlled burning, and landfilling.

The small-sized wastes could be chipped and used for mulch and erosion control. The larger wastes could be burned in an air-blower type pit burner (see Air Quality section). All of the land-clearing wastes could be taken to the Irvington Landfill for burial. The actual use of any one or all of these methods would be based on the practical application of each method within the time constraints of the construction schedule.

Grading of the plant site and construction of stormwater clarification basins will not yield excess soil materials, because of a balancing of cut and fill activities. However, about 500,000 cubic meters (650,000 cubic yards) of material will be removed from the site during dredging of the waterfront area. It is anticipated that this material will be taken to the approved disposal sites used by the Corps of Engineers for dredged material from the ship channel project.

Construction wastes resulting from the erection of structures and site cleanup will include lumber, concrete, brick, cardboard, and metal scraps. This material will be conveyed to the Irvington Landfill for disposal by a private contractor.

Permanent operations at the Ideal Basic Industries cement plant will yield approximately 1,043 metric tons (1,150 tons) of solid waste per year. The largest sources of solid waste will be the refractory linings of kilns and suspension preheaters. During the course of normal operations, portions of the refractory brick lining deteriorate and must be replaced. The debris removed in this process will amount to 667 metric tons (736 tons) per year.

The raw materials and coal received by the plant may contain pieces of rock, wood, or metal, which must be removed. These will contribute approximately 248 metric tons (274 tons) per year of waste material. Bag breakage in the packhouse will account for 14 metric tons (16 tons) of paper waste per year, and scraps and oily maintenance waste from the shop area will amount to 34 metric tons (37 tons) per year. Approximately 11 metric tons (12 tons) of paper waste will be produced every year by the company lunchroom and office area.

Sediment will accumulate in the stormwater catchment area and the wastewater settling basin. This material must be removed to avoid loss of storage capacity, yielding about 68 metric tons (75 tons) of sediment (dry basis) per year. The sediment will be re-introduced, if possible, to the raw material piles, but otherwise must be removed by the disposal contractor.

All of the materials listed, with the exception of recyclable metal scraps, waste oil, and paper, will be hauled to the Irvington Landfill.

Special regulations under the recently-enacted Resource Conservation and Recovery Act (RCRA) classify hazardous or toxic wastes. Although hazardous and toxic materials under RCRA have not yet been defined precisely, the cement plant wastes will probably not be included.

## IMPACTS

Disposal of general construction debris at the Irvington Landfill will not involve any special problems other than utilization of available landfill capacity. Burning of vegetative wastes could have some intermittent effects on air quality, as discussed in the Air Quality section. These disposal activities are assigned low magnitude and significance as environmental impacts. Disposal of dredged materials from the waterfront area is an impact of moderate magnitude due to the quantities involved, but low significance since an approved site will be utilized. The impact is long-term and irreversible.

The solid waste load from the Ideal Basic Industries plant will shorten slightly the active life of the landfill. The magnitude and significance of these solid waste disposal activities, as environmental impacts, are considered low. Centralized land disposal of solid waste is a long-term, but reversible action because of the many possibilities for re-use of landfill sites.

## MITIGATING MEASURES

A general class of actions which will minimize resource utilization and potential problems associated with solid waste disposal will be the practice of recycling all possible materials (e.g., spillage, oily wastes, scraps) either internally or through sales to dealers. Environmental safeguards with regard to controlled burning have already been discussed. There are no mitigating measures for the disposal of solid wastes.

## ALTERNATIVES

The no-action alternative would involve marginal, short-term air quality benefits due to the absence of burning of vegetative waste at the construction sites and in the long run would decrease slightly the utilization of public landfill capacity.

The land-clearing wastes are to be burned, chipped for mulch, or taken to the Irvington Landfill for disposal. Alternative actions include public use as firewood; use in local pulp mills or waste wood boilers; and on-site burial.

The use of the wastes for firewood, paper pulp, or fuel are sound environmental alternatives. Their major disadvantage, which is shared somewhat with the proposed action of chipping and landfilling, is the extra commitment of time and money during the beginning of the construction schedule. All other construction-related activities would be delayed if the clearing operation was extended beyond its projected three-month period. While these are not environmental criteria, they are important factors since controlled burning is only slightly less desirable on an environmental basis. The on-site burial alternative might cause a soil stability problem when the wood decays and would require clearing of additional land to serve as a disposal site.

The proposed disposal actions for construction wastes are environmentally acceptable and the most practical for the construction contractor to implement.

During plant operatons, the solid wastes not being recycled will be taken to the Irvington Landfill. Alternatives to this action are burial on-site and partial use as fill off-site. The majority of the waste, such as bricks, scraps, and sediment, could be used as fill material without presenting an environmental problem. The putrescible and maintenance wastes would require proper burial techniques as practiced at a sanitary landfill.

The three proposed waste disposal techniques, if properly performed, would be environmentally sound actions. The two alternatives would eliminate or reduce the use of available land at the Irvington Landfill. However, the on-site landfill alternative would require development of an additional portion of the plant property that would be sufficiently above the groundwater table and out of the wetlands. Also, the practical necessities of daily cover material, equipment, and personnel would have to be provided. From an environmental viewpoint, proper disposal could be better achieved on a regular basis by trained operators at a public landfill.

The off-site use of some of the wastes as fill material is a viable action that could be used if an acceptable area could be found.

# WATER RESOURCES AND GEOTECHNICAL ASPECTS

## BASELINE ENVIRONMENT

The proposed plant site is situated in the Southern Pine Hills subprovince of the East Gulf Coastal Plain. The area is characterized by low, smooth hills developed on floodplain, terrace, and beach deposits. The plant site is on Quaternary alluvium (silt and sand deposits). Test holes at the site reveal at least 41 meters (135 feet) of unconsolidated sands, silts, and clays. Nearby wells indicate that at least 200 meters (656 feet) of unconsolidated sediments lie below the area. Because of the thick section of clayey material, some settling of the land surface can be expected to result from compaction under heavy loads. The area is not tectonically active (earthquakes or ground tremors) and is classed in the lowest seismic risk category.

Groundwater supplies are available in Mobile County from permeable sand layers. Twelve wells within an 8-kilometer (5-mile) radius of the proposed plant site range in depth from 15 to 150 meters (50 to 500 feet and tap either alluvial or Miocene-Pliocene aquifer beds. The latter units generally yield good quality soft water, but local groundwater quality problems are known to occur. There is some evidence of saltwater intrusion near Mobile.

Elevations on the site range from 6 meters (20 feet) above mean sea level near the barge canal to sea level along the canal waterfront and marsh areas. Most of the plant site (the portion of the property proposed for development) drains north to the marsh, with the remainder draining directly to the barge canal.

The surface water bodies of primary importance for the proposed project are the Deer River/Barge Canal and the North Fork Deer River (see

Figure 15). The barge canal was created in 1968 by dredging the Deer River bed to a depth of 3.7 meters (12 feet) and a width of 90 meters (300 feet). Some sections of the river that were bypassed now remain as marshy bayous. The dead-end barge canal extends inland a distance of 3.2 kilometers (2 miles) and receives little freshwater inflow because of its limited drainage area. As a result, there is relatively little water circulation, which allows stagnant bottom conditions to develop, especially during the summer months when salinities in the barge canal and bay are high. Because the system has little assimilative capacity for additional oxygen-demanding materials, the South Alabama Regional Planning Council has recommended that no point discharges to the canal be permitted unless the effluent is demonstrably better in quality than the existing water in the canal (SARPC, 1977). This recommendation is being implemented by EPA in the review of NPDES permit applications.

The North Fork Deer River, which bisects the Ideal Basic Industries property, is bordered by both saltwater and freshwater marsh systems (see Figure 16). The freshwater marsh system, which is along the river's western reach, appears to have a substantial capacity for assimilating pollutants. However, the marsh appears to have been degraded in the past by industrial-related discharges.

Both the barge canal and the North Fork Deer River are characterized by high summer water temperatures, low to moderate color, and low alkalinity. Nutrient levels are sufficiently high to support very productive phytoplankton populations, and concentrations of lead are periodically high in the North Fork Deer River.

## RELEVANT PROJECT CHARACTERISTICS

During construction of the plant there will be stormwater runoff and disturbances in the existing bodies of water. The cleared areas will have a potential for erosion which will cause sedimentation and turbidity effects in both the North Fork Deer River and the ship channel. Early in the construction period, a permanent stormwater

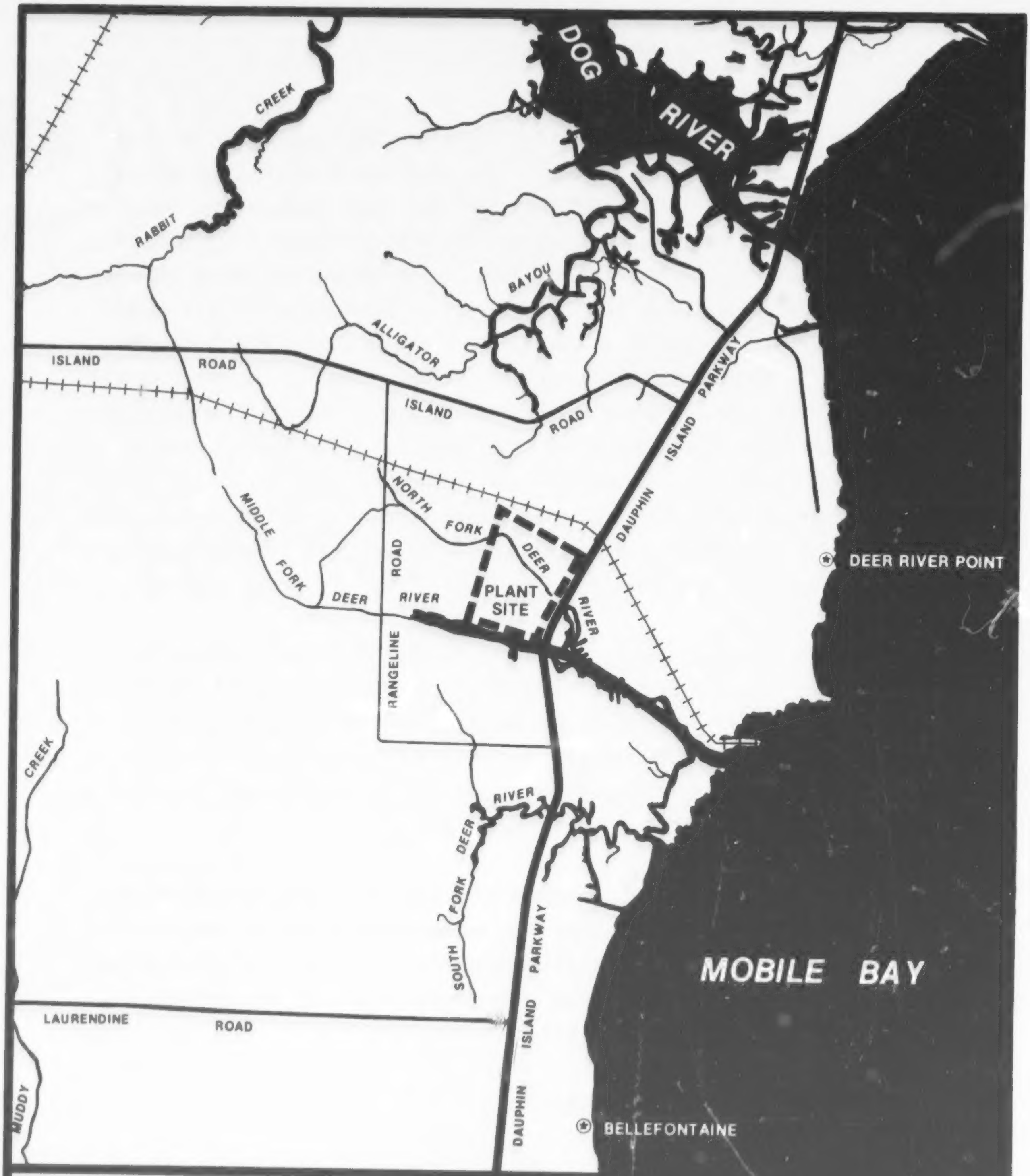
DOG RIVER
RABBIT CREEK
BAYOU
ALLIGATOR
ISLAND ROAD
ISLAND ROAD
DAUPHIN ISLAND PARKWAY
NORTH FORK DEER RIVER
MIDDLE FORK DEER RIVER
RANGELINE ROAD
PLANT SITE
DEER RIVER POINT
CREEK
SOUTH FORK DEER RIVER
MOBILE BAY
LAUDENDINE ROAD
MUDDY
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Figure 15
SURFACE WATER BODIES

SOURCE: Environmental Science and Engineering, Inc., 1977.

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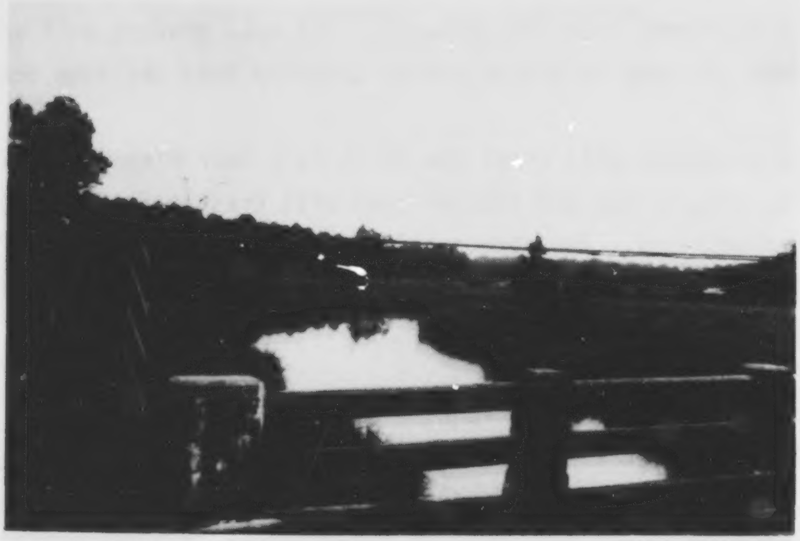
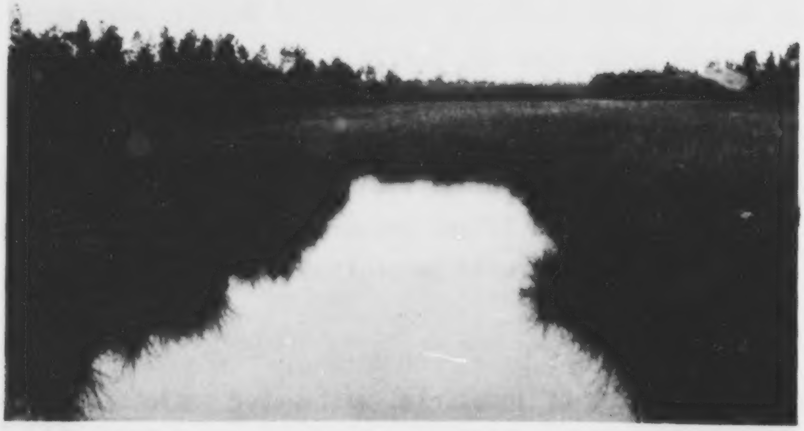
STATEMENT FOR IDEAL BASIC INDUSTRIES

**PROPOSED CEMENT MANUFACTURING
PLANT THEODORE INDUSTRIAL PARK
MOBILE, ALABAMA**



**EAST VIEW**



**WEST VIEW**

**Figure 16**
PHOTOS OF THE THEODORE PLANT SITE ALONG THE NORTH FORK DEER RIVER FROM THE BRIDGE ON DAUPHIN ISLAND PARKWAY

SOURCE: Environmental Science and Engineering, Inc., 1977.

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catchment area will be built to reduce the solids content of the water prior to discharge into the wetlands. The site grading will maintain a northernly drainage to reduce runoff directly into the ship channel.

The access roadway will cross the North Fork Deer River with a 15-meter (50-foot) long bridge and the railroad will trestle across both the river and wetlands. The construction of these structures will include the use of temporary berms and barriers to reduce the effect on the water quality in the river.

The docking facilities will require about 500,000 cubic meters (650,000 cubic yards) of material to be dredged. It is anticipated that this activity will occur during dredging of the ship channel and that spoil from constructing the dock will be taken to the approved disposal areas used by the U.S. Army Corps of Engineers.

During operations the cement plant will use about 1,080,000 liters (285,000 gallons) per day of potable water supplied by the Board of Water and Sewer Commissioners of the City of Mobile. The water will be used for cooling tower make-up, sanitary requirements for 135 employees, truck and floor wash areas, and process cooling systems.

The sanitary wasteloads of 20,000 liters (5,000 gallons) per day will be pumped to the new McDuffie Island treatment plant (during plant construction portable toilets will be provided and serviced by a local contractor).

There are four sources of industrial wastewater projected for the plant:

1. The runoff from the uncovered raw material piles,
2. Truck and car wash and floor washes,
3. Process cooling tower blowdown, and
4. The runoff from the aboveground fuel oil tank's containment berm.

The daily average flow expected from the two uncovered stockpiles of limestone and clay will be 166,000 liters (43,800 gallons) per day. Simulated leachates were collected from samples of all the raw materials (limestone, clay, gypsum, sand, iron ore, and coal) and subjected to chemical analysis and fish bioassays. The results showed that the materials are nontoxic and their leachates, when diluted with the other wastewaters, should be of acceptable water quality meeting Fish and Wildlife Standards.

Approximately 6,600 liters (1,750 gallons) per day of wastewater is expected from the truck and car wash, and another 17,700 liters (4,680 gallons) per day is anticipated from the various floor wash areas. This wastewater, like the stockpile leachates, will be nontoxic since it will contain the same materials.

The cooling system is to be a noncontact type in which the cooling tower will vent or blow down some of its water in order to maintain desired suspended solids content. The vented water is to be replaced by potable "make-up" water. The blowdown will contain suspended solids and an algicide that is not yet specified, but must be approved by EPA prior to use. The blowdown will partially evaporate and will leave about 140,000 liters (36,000 gallons) per day that will enter the settling basin.

The aboveground fuel oil tank and its containment berm will have an average daily flow of 700 liters (190 gallons) from runoff and direct rainfall. This stormwater will be drained to the settling basin to provide full capacity of the containment berm in case of a tank failure.

The settling basins will be designed to meet the effluent requirements of 50 mg/l of total suspended solids, and a pH within the range of 6.0 to 9.0 (the draft NPDES permit presented in the Permit and Approval section of this document contains more detailed effluent requirements). The settling basin will have a storage capacity of 16 million liters

(4.2 million gallons) which is double the runoff expected from a 10-year, 24-hour storm event.

The stormwater catchment area will collect and retain the initial flush of most storms. The 2-hectare (5-acre) area will consist of two bermed basins in series. The berm height will be 0.9 to 1.5 meters (3 to 5 feet) and will have a storage capacity of 12 million liters (3.3 million gallons). This storage capacity is roughly equivalent to the runoff from the plant site area during the first 50 minutes of a 10-year, 1-hour storm event. The catchment area will discharge the runoff into the freshwater marsh. The average daily flow from the catchment area is expected to be 910,000 liters (240,300 gallons). The area, which will provide reduction of the suspended solids level in the runoff, is considered by EPA as a best management practice (see Permit and Approval section). In addition, the discharged water will undergo natural treatment in the wetlands prior to entering the ship channel via North Fork Deer River.

## IMPACTS

Land clearing and grading activities on about 20 hectares (50 acres) of the Ideal Basic Industries property will result in land erosion and sediment transport during storm events. However, except for a short period prior to construction of the stormwater catchment area, the sediment loads to the North Fork Deer River should be small because of the reduction of solids provided and the additional filtering action of the marsh vegetation. Sediment transport to the ship channel should be minimal because only a small portion of the plant site drains to the south. Construction of the rail trestle and access roadway over the North Fork Deer River will cause localized sediment and turbidity effects of moderate magnitude. However, all of these erosion-related effects are attributed low significance as water resource impacts because of their short duration and reversible nature.

Construction of docking facilities on the ship channel waterfront will affect turbidity and suspended solids concentrations in the immediate vicinity of the Ideal Basic Industries property. Although this effect will be moderate in magnitude, its significance is considered low because of the small portion of the channel affected and because the action is short-term and reversible.

Diesel fuel oil used to power heavy equipment could conceivably be spilled during construction. However, a berm will surround the fueling area and most spills could be easily contained. The magnitude of possible contamination of surface waters is thus considered very low. The significance is considered low since the amount of water affected would be small. The impact would be short-term and reversible.

Permanent operations at the plant site can affect surface water resources through general stormwater discharges, industrial wastewater discharges, and oil spills. As described earlier, the discharge of process wastewaters from the settling basin will meet all applicable water quality standards. The magnitude and significance of the effluent as a water resource impact are thus considered low, long-term and reversible.

The stormwater runoff from the plant site into the freshwater marsh will approximately double the existing runoff for the same size storm. The catchment area and wetland filtration will reduce the suspended soils levels so that the effect on the water quality of the North Fork Deer River should be of low magnitude and significance. The impact is considered long-term but reversible. The impact is avoidable by discharging the stormwater runoff directly into the ship channel.

The present design of the plant shows a 380,000-liter (100,000-gallon) aboveground fuel oil storage tank with a containment berm. The berm is sized to hold all of the oil in case of a spill or tank failure. The probability of any oil reaching the North Fork Deer River is slight due to the northward grading into the stormwater catchment area. If a spill did reach the ship channel, it would not quickly disperse because of the poor flushing action of the channel and should be easily contained and removed. Therefore, the water quality impact from a potential oil spill is considered low in magnitude as well as significance; short-term and reversible.

## MITIGATING MEASURES

The environmental safeguards to be employed during construction will include the stormwater detention basin, the placement of berms and barriers at the bridge/trestle construction site, and the temporary surfacing of access roadways and the use of chipped wood wastes for mulch to reduce erosion.

Mitigating measures which could reduce erosion/sedimentation effects are: (1) grading of the site to minimize slope lengths; (2) temporary soil stabilization measures such as netting and chemical binders; (3) natural or installed buffers, such as vegetated strips; and (4) artificial structures including inlet filters, sediment traps, dikes, and ditches. Most of these measures would be feasible during at least some stages of the project, but are not considered necessary in addition to the proposed safeguards to achieve adequate environmental protection.

Water resource impacts during permanent operations will be lessened by four major environmental safeguards--the industrial wastewater settling basin, the stormwater detention area, the coverage of raw material stockpiles, and the berm around the fueling area.

The mitigating measure which could be employed in addition to these safeguards would be to provide chemical treatment of industrial wastewater and/or stormwater as part of the clarification process (e.g., through the use of flocculants, coagulants, etc.). This step is feasible, but at the present time it is not considered necessary to preserve environmental quality and to meet all water quality standards.

## ALTERNATIVES

The no-action alternative relates to the expected conditions of the ship channel and North Fork Deer River. The most important determinant of water resource characteristics in 1992 will be the Theodore Ship Channel project. The water quality problems now observed in the barge canal may also characterize the proposed ship channel. Modeling studies have concluded that the rate of flushing will be too slow to remove waste from the channel effectively, so that water quality could degrade from existing levels. A possible solution is to have industrial wastewater dischargers use the proposed common outfall into Mobile Bay and thereby eliminate direct discharge into the ship channel. An Environmental Impact Statement is being prepared for the Corps action of reviewing the construction applications for the outfall line.

The water quality of North Fork Deer River could degrade in the future because of existing and additional industrial discharges. It is most likely that in 1992 the river will experience moderate water quality degradation.

The alternatives to discharging the industrial wastewater to the ship channel would include: (1) discharge of the settling basin effluent into the freshwater marsh; and (2) utilization of the proposed common wastewater outfall in Mobile Bay. The major advantage of discharging the industrial wastewater effluent into the marsh system is that the effluent would receive additional treatment and purification by natural processes prior to reaching open water. The possible disadvantage is that the assimilative capacity of the marsh might become overloaded, resulting in long-term damage.

The common wastewater outfall project, which has been proposed by the Board of Water and Sewer Commissioners of the City of Mobile, would involve an outfall extending approximately 5.6 kilometers (3.5 miles) into Mobile Bay. Utilization of this facility by Ideal Basic Industries would be environmentally acceptable; however, this step does not appear necessary as a means of preventing impacts in the ship channel by the effluent from the cement plant.

Alternatives to discharging the general stormwater runoff into the freshwater marsh during the construction and operation phases are diverting all or part of the general runoff from the site to the ship channel. A benefit of discharging treated stormwater to the ship channel rather than to the North Fork Deer River would be to increase the flushing of the channel by providing additional flow.

From an environmental viewpoint, as long as the runoff characteristics to the wetlands are not reduced from existing conditions, the alternative actions would be feasible and essentially equivalent to the proposed action. However, discharging all or part of the runoff to the ship channel would require a catchment basin close to the waterfront area. Under present facility layout and grading plans, these alternatives would not be very practical due to space limitations.

# ARCHAEOLOGY

## BASELINE CONDITIONS

The archaeological-historical inventory of the Ideal Basic Industries plant site has included a review of historic literature, topographic maps, aerial photographs, and previous site surveys. A review of the National Register of Historic Places has indicated that there are no certified historic sites within the vicinity of the Ideal property.

An on-site "walk-over" archaeological-historical survey was conducted under the supervision of the University of South Alabama. All roads, ditches, creek banks, and cleared or eroded areas were investigated for possible features and artifacts. Vegetation was examined, since calciphile vegetation in an otherwise acid soil is often an indicator of buried sites. No archaeological or historical sites were recorded during the survey. Artifacts present on the site represent debris that has been deposited there within the last ten years.

Research and on-site investigation indicate that no sites of archaeological-historical interest will be impacted by either construction or operation of the proposed cement plant. The Alabama Historical Commission, state historic preservation office, has concluded that the development will have no adverse effect on any cultural resources included in, or eligible for, the National Register of Historic Places. However, in the event that a site of potential interest is uncovered during construction, the Commission will be notified to appraise the discovery.

# ECOLOGY

## BASELINE CONDITIONS

### STRUCTURE OF TERRESTRIAL ECOSYSTEMS

The two major vegetative communities found at the proposed plant site are a modified longleaf pine forest and a marshland which has gum and titi swamps at its perimeter. A map of these communities is presented in Figure 17. The upland pine forest areas have an overstory of longleaf pine with a well-developed understory of hardwoods. The mature pines were last harvested in 1974, and the use of controlled burning for forest management has been discontinued. As a result, hardwoods have developed rapidly and there is a greatly increased abundance of weedy and/or disturbed area species (e.g., broomstraw, muhly, meadowbeauty, throughwort).

The marsh areas at the proposed plant site include a tidally-influenced brackish marsh, a freshwater marsh, and an intermediate forested area of somewhat higher land. The brackish marsh is composed primarily of sawgrass. The intermediate marsh is characterized by the presence of overstory species (titi, black willow, red maple) which are small in stature but clearly define the upper limit of saline influence. Upstream from the intermediate zone, overstory species become sparse and are replaced by grasses and other low-lying vegetation (goldenrod, dog fennel, pickerel weed, arrowhead). Higher in the freshwater marsh, near the property boundary, the vegetation is almost entirely cattail and reeds.

The animal community in the longleaf pine upland area is characterized by a number of exclusives (species occurring in a single habitat), which include nuthatches, warblers, squirrels, flatwoods salamanders, and black pine snakes. Animal species most frequently observed at the proposed plant site are cardinals, quail, doves, red-bellied

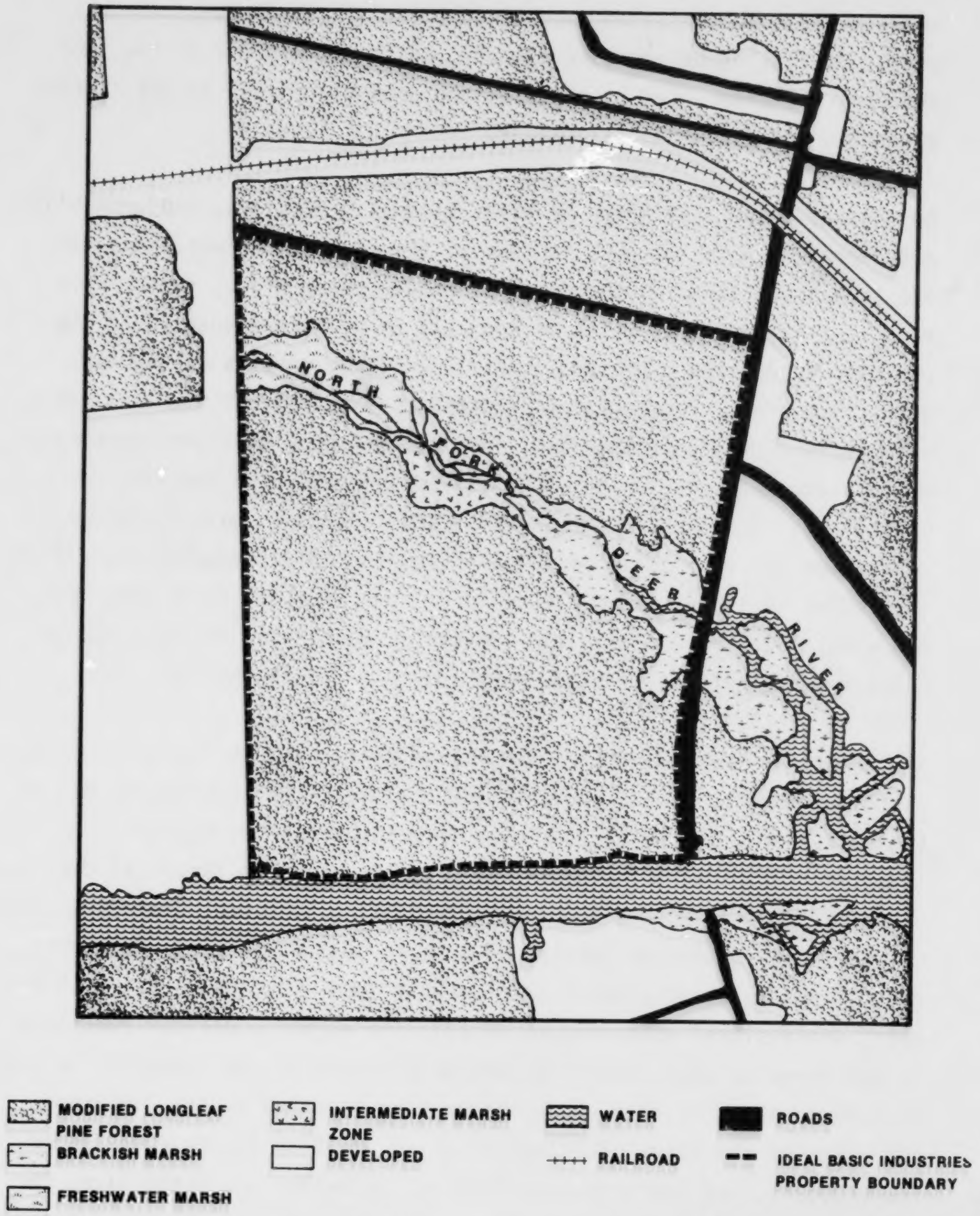
NORTH FORK DEER RIVER
MODIFIED LONGLEAF PINE FOREST
BRACKISH MARSH
FRESHWATER MARSH
INTERMEDIATE MARSH ZONE
DEVELOPED
WATER
RAILROAD
ROADS
IDEAL BASIC INDUSTRIES PROPERTY BOUNDARY

Figure 17
VEGETATION MAP FOR THE PROPOSED PLANT SITE

0 SCALE IN METERS 300

N

SOURCE: Environmental Science and Engineering, Inc., 1977.

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woodpeckers, raccoons, and rabbits (cottontail and swamp). The bog areas, consisting of relatively small, moist depressions in the land surface, are frequented by reptiles and amphibians such as the scarlet kingsnake and flatwoods salamander.

An aquatic-associated group of birds, mammals, reptiles, and amphibians are represented on the site because of the presence of wetland areas. The exclusives found in the marshes include marsh wrens, rails, rice rats, nutria, and salt marsh snakes, all of which are adapted to the periodic inundation of marsh vegetation. Other species (e.g., barn owls, fish crows, raccoons, and skunks) utilize the marsh as well as a wide variety of other habitats. The most commonly observed vertebrate animals are swallows, snipe, sharptailed sparrows, and red-wing blackbirds. Although the fresh and brackish marshes have different vegetation and vary in terms of salinity, the animal populations differ more quantitatively than qualitatively. For example, there were more red-wing blackbirds seen in the freshwater marsh than in the brackish marsh because cattails provide more suitable nesting habitat.

Timbering has reduced most of the upland portion of the plant site to a disclimax shrub and early forest growth state, corresponding to one of the early seral stages of the Southern Mixed Deciduous Forest (Quarterman and Keever, 1962). The present disturbed nature of the site is characterized by poor nutrient conservation (erosion, leaching); poor microclimate regulation (drying of bogs in logged and early regrowth areas); and relatively short and unstable food webs associated with the early successional state (Odum, 1971). The normal ecosystem functions of the forested area, which include soil retention and formation as well as surface water storage and recharge, are impaired by the disturbed condition of the site. Hunting for quail, rabbit, and dove occurs on the property, and there is some fishing for mullet and trout along the barge canal. Prior to lumbering, significant red squirrel populations were present (Athens, 1977). However, the site is not considered a major hunting and fishing area.

Wetlands are valuable resources for water conservation, flood control, and waste recycling (Wharton, et al., 1976). The marshes at the plant site provide these services and in addition appear to improve the quality of water delivered from the North Fork Deer River drainage area to Mobile Bay. The marsh areas constitute a relatively stable system, which is characterized by high biomass productivity. Such tidal marshes serve as important nursery grounds for seafood, and the organic material exported from these areas to estuarine systems is very important to commercial marine organisms. Peat has accumulated in the North Fork Deer River marsh system and is augmented by silt carried from the uplands. The effectiveness of the marsh system in trapping sediment is indicated by the fact that the accumulation of gray silt is twice as thick in the upper end of the freshwater marsh as in the intermediate forested area, and decreases still further in the brackish marsh.

## SIGNIFICANT TERRESTRIAL SPECIES

Two categories of plant and animal species have received special attention in the field surveys, namely:

1. Commercially and recreationally important species, and organisms which are critical to these species or to overall ecological health; and
2. Rare and endangered species.

Commercially important plant species at the Theodore site are limited to pine and oak, which have limited value because of past cutting and because the site is too small for efficient commercial forestry. However, the marsh plants at the site are considered valuable collectively for wildlife and fisheries production. The conditions produced by past clearance of the upland area also appear favorable for supporting populations of some important faunal species.

The important animals which occur, or can be expected to occur, on the proposed plant site are either fur-bearing animals (nutria, raccoons) or game species (swamp and cottontail rabbit, bobwhite quail, mourning dove, various rails, common snipe, waterfowl). Suitable habitat for nutria, raccoon, and opossum is found at the plant site. Raccoons utilize both the upland and marsh areas, and nutria have been observed in both the freshwater and brackish marsh. Bobcats are considered likely at the plant site on the basis of habitat characteristics. No signs of beaver, muskrat, mink, or river otter have been observed, but these species are reported to occur locally.

The entire upland area of the plant site provides good rabbit habitat. The marsh areas are relatively undisturbed and provide adequate cover for migratory and resident birds. Three species of rails have been observed in both the fresh and brackish marshes. Habitat analysis indicates the probable use of the marsh and barge canal by wintering ducks and geese, although few waterfowl breed in Alabama. Quail, snipe, and mourning doves are abundant.

One threatened species (the American alligator) and two species of special concern (merlin and little blue heron) have actually been observed, all in the marsh area. On the basis of habitat analysis, twelve additional special-status animal species are considered likely to occur at the site. These include two birds of special concern whose habitat requirements are not highly restrictive, and ten animal species that occupy marsh or swamp areas.

A similar analysis of plant species has identified four endangered species and eleven threatened species that are known to occur in Mobile County habitats resembling the plant site. None of these plant species have been observed at the site, and all except one (a marsh plant) are assigned a low probability of occurrence due to recent logging of the upland area. Therefore, the plant site is not considered an important part of the habitat of these species.

## AQUATIC ECOLOGY

The aquatic habitats at the plant site are North Fork Deer River and the barge canal. The few bogs on the site and the flora in the wide band of marsh along the creek are described in the terrestrial section.

North Fork Deer River is a small meandering tidal creek about 6 meters (20 feet) wide as it crosses the center of the plant site. Several industrial wastes are discharged into its upper reaches; however, due to a peculiar feature of the river, water in the lower reaches is of relatively good quality. A raised area forms a small dam across the marsh as it crosses the Ideal Basic Industries property. There is no channel, and water seeps through this ridge which supports the low intermediate forest described in the terrestial section. This seepage markedly cleans the water. This ridge also marks the transition between brackish and freshwater marsh.

The straight barge canal was dredged through the marsh of the meandering Middle Fork Deer River, and the complete drainage of the Middle Fork flows through the barge canal. However, the depth of the canal prevents mixing, and oxygen levels in the deeper parts of the canal become low, especially in summer. For at least four months of the year, only the top 2.5 meters (8 feet) of the water column in the canal are really useful for fish and wildlife.

The effects of this stagnation are especially clear in the distributions of shrimp. In the spring, brown shrimp (*Penaeus aztecus*) occur in Middle Deer River and also in the barge canal, although in reduced numbers. In the summer, brown shrimp are replaced by white shrimp (*P. setiferus*) in Deer River, but white shrimp never appear in the barge canal.

Composition of trawl catches in Deer River and the barge canal is similar to that for other parts of Mobile Bay. Anchovies (*Anchoae mitchilli*), menhaden (*Brevoortia patronus*), spots (*Leiostomus xanthurus*), and Atlantic croakers (Micropogon undulatus) are also abundant throughout Mobile Bay (Swingle, 1971) and have high commercial importance (Chermock, 1974). Mullet and blue crabs are other commercially important species common at the plant site (Environmental Science and Engineering, 1977), but gar and abundant killifishes were also observed.

A 5-hectare (12-acre) oyster reef exists north of the site at Hollingers Island (May, 1971). Most of the oysters immediately south of the canal were removed in 1967, in response to plans for expansion of the canal, and no surveys have since been conducted. Pollution forces periodic closure of all reefs in Alabama (May, 1972); and most of northern Mobile Bay, including the area of Deer River, is permanently closed to shellfishing (U.S. Army Corps of Engineers, Mobile District, 1977).

In summary, available data suggest that the aquatic fauna of Deer River is comparable to that of other marshy creeks bordering Mobile Bay. The barge canal has a reduced fauna, largely because low flow rates relative to depth and inadequate mixing result in stagnation and oxygen depletion during the summer.

## RELEVANT PROJECT CHARACTERISTICS

In the proposed plant layout, about 34.4 hectares (85 acres) of the 70.8-hectare (175-acre) property will be developed. The land north of the North Fork Deer River, the brackish marsh, most of the freshwater marsh, and a 90-meter (300-foot) wide greenbelt along the southeastern boundary will not be developed. Along the entire waterfront boundary, dredging will be performed to provide a depth of up to 12 meters (40 feet) below msl. A plant access corridor for a 2-lane road and railroad trestle will parallel the western property line and be about 47.2 meters (155 feet) wide. This corridor will disturb about 0.5 hectares (1.2 acres) of wetlands. The roadway will cross the North Fork Deer River with a 15-meter (50-foot) bridge and will fill in about 0.2 hectare (0.5 acre) of the 3.0-hectare (7.3-acre) freshwater marsh. The railroad trestle will consist of twenty 9-meter (28-foot) spans and will cross the river and entire wetlands. The stormwater catchment area will be formed just outside the southern edge of the freshwater marsh and the plant site will be graded to drain into this area. The proposed project will increase the volume of both waterway traffic and highway traffic in the vicinity of the plant site.

## IMPACTS

The landclearing of the modified longleaf pine forest represents a loss of about 50 percent of the trees on the property, but this action is considered of low magnitude due to the early successional state and disturbed condition of the remnant forest. This impact will be of low significance in the area, but long-term, irreversible, and unavoidable.

In relation to wildlife, these activities will eliminate habitat and displace animals from the developed portion of the property. Due to the commonness of the habitat and the wildlife populations throughout the surrounding area, the loss is considered of low magnitude and significance, but it is a long-term, irreversible impact. Reducing the possible habitat of the 11 animals and 14 plants of special status is considered an impact of low magnitude since there is a low probability of these species occurring on the site. This impact is of low significance because of the availability of similar habitat in the area and is long-term and irreversible.

The ecological impacts of disturbing the wetlands are the loss of possible habitat for the river frog (special concern status) and the suitable habitat for the nutria and other marsh-associated species. Both impacts are of low magnitude and significance since there is a low probability of the river frog on-site and due to the small area involved. These impacts will be long-term and irreversible.

The other construction impacts of dredging, noise, oil spills, and stormwater discharges are also considered of low magnitude and significance. Dredging effects will be minimal due to the small area involved and the relationship of the area to the ship channel project. Noise will affect only the undeveloped area and remaining wildlife. An oil spill during construction is of very low probability and an oil spill would involve only small quantities from construction equipment or a bermed fueling area. Prior to construction of the stormwater catchment area, runoff will be slowed by use of temporary berms or ditches and some settling will probably occur in a small area of the marsh. All of these impacts are considered short-term and reversible.

The discharge of storm water after collection in the catchment area will continue during plant operations and will be a long-term and reversible impact. Because the system will reduce the solids content of the runoff, the impact on the marsh will be of low magnitude and significance. This impact is avoidable by discharging the runoff to the ship channel.

The discharge of the industrial wastewater from the settling basin is not expected to have serious ecological impacts. A basic fish bioassay has shown the runoff from the storage piles to be non-toxic, and any algicide to be used in the cooling tower system must be approved by EPA prior to use. Therefore, the magnitude of the wastewater discharge to the ship channel will be low. The significance is also low in comparison to the water quality of the channel. Any effects from the discharge will be long-term and reversible.

Since there will be an aboveground fuel oil tank on the site, an oil spill or tank rupture is possible. However, the capacity of the tank, 380,000 liters (100,000 gallons), will be fully contained in a surrounding berm if a tank failure occurs. The site drainage is to the stormwater catchment area; therefore an oil spill at the plant site would be collected in this area and would not enter the wetland area. The magnitude of a spill is considered low due to the safeguards to be used. The impact of a spill should be of low significance, short-term, and reversible.

## MITIGATING MEASURES

The environmental safeguards affecting ecological conditions at the plant site will include all of the measures already discussed to minimize sedimentation, water pollutant emissions, air pollutant emissions, and noise.

It is significant that only about one-half of the land area owned by Ideal Basic Industries will be cleared and developed as part of the project. During construction, precautions will be taken so that the marshes and other preservation areas will not be disturbed unnecessarily by heavy equipment operation.

The ecological impacts are typically unavoidable and do not have possible additional actions for mitigation.

## ALTERNATIVES

The 1992 ecological condition of the property under the no-action alternative is expected to be similar to existing baseline conditions.

If the proposed cement manufacturing facility were not constructed, there would be no immediate loss of upland vegetation or habitat for terrestrial species. Habitat characteristics would change gradually, however, as succession proceeds. Mature pine forests would replace the existing scrub vegetation, and the area would ultimately develop as a mixed deciduous woodland. The populations of many animal species would decline moderately from present levels.

By 1992, without the proposed cement plant in operation, the cumulative effects of the many pollutants presently released into North Fork Deer River could lead to a deterioration of the river and marshes. However, barring any further developments affecting the river or barge canal, it is expected that the aquatic fauna in 1992 will be similar to existing fauna. Alternative use of the Ideal property could involve other ecological impacts.

Because of the secondary and unavoidable nature of the ecological impacts, the alternative actions deal only with specific placement of roadways and facilities. (The stormwater discharge to the freshwater marsh is avoidable, and relevant alternatives are discussed in the Water Resources/Geotechnical section.)

From a practical viewpoint, the facility will be located in the optimum portion of the property, i.e., out of the wetlands and along the ship channel. Alternative access corridors could be from Airco's access roadway (west), from Dauphin Island Parkway across North Fork Deer River and the adjacent wetlands (north), or from Dauphin Island Parkway south of the river and wetlands (east). Another alternative is the total bridging of the wetlands by both road and railways.

Using Airco's access roadway to cross the river and wetlands would alleviate the portion of the disturbance of the wetlands due to the access road and bridge (but not the railroad trestle). However, one access road for two separate industrial facilities has some undesirable aspects; e.g., problems of a strike at one plant closing the other plant, liability, security requirements, ownership rights, etc. The action is not considered a practical alternative due to the magnitude of these problems.

The alternative access route that would cross the wetlands at another location would not decrease the overall impact on the wetlands. Access from the east would eliminate disturbance of the wetlands bordering the North Fork Deer River; however, in order to use this route, the state-owned Dauphin Island Parkway to Island Road and its bridge over the North Fork Deer River would have to be upgraded to withstand the truck traffic from the operation of the cement plant. In addition, the facility layout would have to be redesigned to accommodate this new access route.

Bridging the entire section of the wetland would reduce the potential impacts of the use of fill. However, direct sunlight would be eliminated beneath the structure and would cause some impacts on the wetland vegetation.

The proposed action is considered environmentally acceptable. The alternatives of bridging the entire freshwater marsh and the eastern entrance from the parkway are also environmentally acceptable but are not as practical as the proposed action.

# SOCIOECONOMICS

## BASELINE CONDITIONS

### PRESENT CONDITIONS

The Mobile metropolitan area, consisting of Mobile and Baldwin Counties, Alabama, had a 1977 population of approximately 414,000 persons. The mainstays of the area economy are the Port of Alabama and manufacturing activities linked to the region's natural resources and transportation facilities. A period of slow growth in the late 1960's, caused by the phase-out of Brookley Air Force Base, has been followed by rapid expansion in nearly all sectors of the economy, resulting in population growth rates between 1.0 and 1.5 percent per year since 1970. With net in-migration exceeding 1,000 persons per year, the Mobile metropolitan area has emerged as a locus of economic opportunity for persons living in south Alabama and neighboring states.

Socioeconomic assessment of the proposed Ideal Basic Industries project has focused on south Mobile County (census tracts 65 through 73), which consists roughly of all land in Mobile County located south or southwest of the Mobile city limit. South Mobile County contains suburban residential areas, concentrated near the Mobile city limit and along the Interstate 10/U.S. Route 90 corridor, as well as Theodore Industrial Park, the fishing village of Bayou La Batre, the Dauphin Island resort community, and very large areas of agricultural and vacant land. The population of south Mobile County has increased by more than 4 percent per year since 1960, reaching approximately 47,400 persons in 1977 (see Table 5). Although the establishment of Theodore Industrial Park has had some influence upon population growth in recent years, the most important factors have been residential amenity and land availability rather than job opportunities in the suburban area. At present, roughly 25 percent of employed south Mobile County residents work within this

Table 5. Population of the Mobile Metropolitan Area and Component Areas, Past and Projected

| | Mobile SMSA* | Mobile County | South Mobile County | |
|---|---|---|---|---|
| | | | Number | Percent of Mobile SMSA |
| 1960 | 363,389 | 314,301 | 22,846 | 6.3 |
| 1970 | 376,690 | 317,308 | 34,924 | 9.3 |
| 1977 | 414,000 | 343,000 | 47,400 | 11.4 |
| 1985 | 455,000 | 380,000 | 57,300 | 12.6 |
| 1992 | 476,000 | 394,000 | 65,400 | 13.7 |
| 2000 | 492,000 | 404,000 | 70,900 | 14.4 |

* Mobile and Baldwin Counties, Alabama.

Sources: SARPC, 1977.
Environmental Science and Engineering, Inc, 1977.

area; 40 percent work in Mobile; 20 percent work at the Ingalls shipyard in Pascagoula, Mississippi; and 15 percent work elsewhere.

The population of south Mobile County is predominantly middle income, with some relatively affluent communities located near the Mobile city limit and along the Mobile Bay waterfront. The occupational distribution of employed persons is similar to that of the Mobile metropolitan area as a whole, with a substantial mix of blue- collar and white-collar occupations.

An extremely high proportion of all dwelling units (98 percent) consist of single-family homes and mobile homes. Over 82 percent of all units are owner-occupied. Recent residential growth has occurred primarily in the Tillmans Corner area and elsewhere along the I-10/Route 90 corridor. The residential areas closest to the Ideal Basic Industries property, namely the Hollingers Island community and scattered neighborhoods to the south along the Dauphin Island Parkway, have gained population at a relatively modest pace. During the 1960's, these residential areas were heavily oriented toward Brookley Field employees, and thus were affected very significantly by the Brookley closing.

With the exception of Theodore Industrial Park and the tourist-oriented facilities at Dauphin Island, there is a relative lack of non-residential, developed land uses in south Mobile County. Retail trade is limited primarily to convenience establishments and stores on Route 90 that sell high-bulk items (e.g., cars, furniture). The area's population remains heavily dependent upon Mobile for most services. There is no form of local public transportation outside Mobile.

Population growth in South Mobile County has resulted in greatly increased demands for public facilities and services. A highly noticeable effect has been the increase in highway traffic. For example, traffic counts on U.S. Route 90 between Theodore and the Mobile city limit rose by 60 to 80 percent between 1970 and 1976, and the comparable increases for Interstate 10 were 70 to 85 percent. Increased school enrollments have created serious problems of overcrowding in south Mobile County schools. As of 1975, five of the eleven public schools were operating above classroom capacity, by amounts ranging from 7 percent to 61 percent (SARPC, 1976). No new school buildings have been constructed in the area since 1975.

Approximately half of all dwelling units in south Mobile County obtain water from public systems, but only about 10 percent have public sewage. All public water provided to residential users in south Mobile County is obtained from local wells. Demand is approaching the capacity of existing wells in the area near Mobile, but the water authority presently serving this area is to be taken over by the Board of Water and Sewer Commissioners of the City of Mobile, which has ample water supplies. Public sewer service is provided in the Tillmans Corner area and Theodore Industrial Park by the Board of Water and Sewer Commissioners of the City of Mobile, and in Bayou La Batre and Dauphin Island by independent systems. Sewer service in the northern area (which ties into the Halls Mill and McDuffie Island treatment plants) and the Bayou La Batre sewer system are being progressively expanded.

The Mobile County governments, including the Boards of Education and Health, constitute the only forms of local government in south Mobile County, except for: (1) the City of Bayou La Batre, and (2) the police jurisdiction of the City of Mobile, which extends 3 miles beyond the Mobile city limit. The mechanisms of land use control in south Mobile County are the exercise of subdivision review by the City of Mobile within the Mobile police jurisdiction, and the building permit requirements for flood-prone areas established under the Federal Flood Insurance Program.

## FUTURE CONDITIONS

The Mobile metropolitan area population is expected to approach a half million persons by the year 2000 (see Table 5). A major growth factor will be the completion of the Tennessee-Tombigbee Waterway, which will shorten the water distances from Mobile to all points in the United States interior above Cairo on the Mississippi River. Other factors will be the continuing industrial investment in Theodore Industrial Park and elsewhere, and possible large-scale developments related to petroleum and natural gas. Population growth in south Mobile county is projected to continue at a gradually decreasing rate, so that this area will have roughly 65,400 inhabitants by 1992 and 70,900 residents by the year 2000.

The most rapid residential growth in south Mobile County will probably occur in areas south and west of Theodore and in the Hollingers Island community. Significant development is also expected in the lower Dauphin Island Parkway corridor (south of Baker Sorrell Road). This development, which has already begun to occur, will consist of dwellings oriented specifically toward workers at Theodore Industrial Park.

## RELEVANT PROJECT CHARACTERISTICS

Most elements of the proposed Ideal Basic Industries project that relate to socioeconomic impact have been mentioned earlier in other contexts. The factors affecting the local economy will include an average employment of 360 workers at the plant site during the 30-month construction period, and a total construction payroll of approximately $15,000,000. Permanent employment of 135 persons at the Theodore plant site will generate an annual payroll of approximately $3,000,000 in 1977 dollars (including fringe benefits). There will also be 50 workers employed in maritime operations who may or may not be Ideal Basic Industries employees. Ideal Basic Industries will spend approximately $10,000,000 locally for materials during construction and will purchase a wide variety of commodities from local suppliers once the plant is in operation, including transportation, fuels, electric power, water and sewer service, and equipment repair services.

The project will generate substantial volumes of waterway and highway traffic. Construction activity will be responsible for approximately 900 trips per day on the average, with a peak of about 1,750 trips per day (referring always to one-way rather than round trips). Most vehicles departing from the plant site during construction will either travel east on Island Road (Hamilton Blvd.) to reach Dauphin Island Parkway or west on Island Road to reach U.S. 90 and Interstate 10. Soon after the plant is in operation, Rangeline Expressway should be completed and should serve as the primary access route. The highway traffic generated after the plant is in operation will include roughly 250 auto trips per day (on a 7-day per week basis) and an average of 150 truck trips per weekday. With regard to waterborne traffic on the ship channel and nearby waterways, the Ideal Basic Industries project will generate 0.5 to 1.5 trips per day for cement shipment; close to 2 trips per day for delivery of limestone; and an unknown, but much smaller, number of trips for delivery of other raw materials. Each trip refers to the arrival or departure of a tug/barge tow or possibly some other type of deep-draft vessel.

## IMPACTS

The construction phase of the proposed Ideal Basic Industries project will have positive economic impacts of high magnitude and moderate significance. When indirect effects are taken into account, the overall economic impact on the Mobile metropolitan area will amount to roughly 1,370 person-years of employment and $30 million in personal income over the two-year construction period. Although the income benefits of the project will be dispersed throughout the Mobile area, it is expected that a total of at least $10 million, or $5 million per year, should accrue to residents of south Mobile County.

The proposed construction project is not expected to have significant effects upon the housing market, public facilities, or social conditions as a result of labor importation. For reasons discussed earlier, the number of workers at the project who are newcomers to Mobile County (i.e., outsiders who take up residence for periods exceeding a week at a time) should not exceed 150 and should average less than 60 over the duration of the project.

The highway traffic generated by the Ideal construction project will contribute traffic congestion in the industrial park area. Based upon the estimates of present traffic volumes, the following increases are expected:

8.3 percent--Island Road west to Rangeline Road,
1.2 percent--Rangeline Road south,
7.9 percent--Island Road west of Rangeline Road, and
3.6 percent--Island Road east to Dauphin Island Parkway.

The average changes for the entire construction period will be approximately half these percentages. The magnitude of traffic impact caused by Ideal's construction is rated moderate, but the significance is considered low due to the expected highway improvements. This impact is short-term and reversible.

Permanent operations at the proposed plant will also generate very positive impacts upon the regional economy. As is typical of highly-capitalized manufacturing operations, the indirect effects of Ideal Basic Industries will exceed the direct impacts. A major example of these indirect effects is that Ideal's purchases from the trucking industry alone will support close to 75 full-time drivers, exclusive of support and maintenance personnel. Income received by the cement plant workers, the related maritime workers, and the employees of firms providing services to the plant will be spent and respent within the local economy and thus will create additional jobs. It is estimated that the total employment impact of the proposed facility within the Mobile SMSA will be approximately 500 jobs. This estimate assumes an employment multiplier of 2.7, applied to the 185 jobs directly created in cement manufacturing and water transportation. (The economic analysis of the Port of Mobile by Dunphy and Chiang (1974) assumed a multiplier of 3.0 for basic employment in the State of Alabama as a whole.)

The plans for the new facility in Theodore have not assumed necessarily that the existing Ideal plant in Mobile will shut down. However, computations of economic impact should consider that the new plant is likely to accelerate the phase-out of the old plant. The new facility will employ approximately the same number of persons as the Mobile plant (depending upon whether or not maritime employees are included), but will produce three times as much cement. The indirect economic effects thus will be substantially greater. The total employment generated directly or indirectly by the proposed Theodore plant is estimated to exceed by more than 100 workers the corresponding employment effect of the existing facility. Table 6 indicates the net employment benefits of the Theodore project under the worst-case assumption that the Mobile plant will close upon startup of the new facility in 1980, whereas otherwise the Mobile plant would continue in operation until roughly 1985. (The assumed employment multipliers are 2.5 for the Mobile plant and 1.9 for the construction project at Theodore.) As shown by the last two lines of Table 6, the new cement plant will generate roughly 5,500 person-years of employment between 1978 and 1992, on a net basis under the worst-case assumption. This amounts to an average of 393 jobs over the 14-year period. The positive economic impacts of the proposed project are thus considered high in magnitude and moderate in significance in the area.

The truck traffic generated by permanent operations at the proposed cement plant will represent an impact of moderate magnitude and low significance. About 760 one-way truck trips during a 50-hour work week are assumed for the operation of the proposed plant. The magnitude of this impact should decline in 1982, when Rangeline Expressway is completed north to Interstate 10. This impact is considered long-term and reversible.

In the near future, traffic conditions in the Theodore Industrial Park area will be improved by: (1) the widening of Island Road (Hamilton Blvd.) to three lanes; (2) the completion of Rangeline Expressway; (3) the improvement of Rangeline Road from Island Road (Hamilton Blvd.)

Table 6. Gross and Net Employment Attributable to Ideal Basic Industries Under Worst-Case Conditions; Mobile SMSA

| | Gross Employment Generated by Ideal Basic Industries Operations | | Net Employment Attributable to Proposed New Manufacturing Facility | | | Comments |
|---|---|---|---|---|---|---|
| | Direct | Indirect | Direct | Indirect | Total | |
| Time Interval | | | | | | |
| 1978-1980 (24 months) | 510 | 550 | 360 | 325 | 685 | Construction phase for new facility; existing plant in operation. |
| 1980-1985 | 185 | 315 | 35 | 90 | 125 | New facility in operation; old plant shut down as a consequence of new facility. |
| 1985-1992 | 185 | 315 | 185 | 315 | 500 | Old plant would be terminated with or without the new facility. |
| Total Man-Years | 3,240 | 4,880 | 2,190 | 3,305 | 5,495 | |
| Average Employment for 14-Year Forecast Period | -- | -- | -- | -- | 393 | |

Source: Environmental Science and Engineering, Inc., 1977.

to Deer River; and (4) the conversion of the Dauphin Island Parkway to four lanes between Perch Creek and Island Road. These improvements will minimize the impacts produced by the substantial volume of heavy truck traffic generated by Ideal. The impact of auto traffic generated by permanent operations at the plant will be negligible because of the 24-hour-per-day operation and because there will only be about 300 one-way trips per day.

Other transportation requirements of the proposed cement plant are not expected to involve significant impacts. Rail transportation could be utilized for delivering up to 270,000 metric tons (300,000 tons) of materials per year to the Theodore site and for shipping as much as 180,000 metric tons (200,000 tons) per year of finished cement. Rail traffic to and from the plant site must use a grade crossing of the State Docks Terminal Railway and Rangeline Road (plus an additional grade crossing of Island Road if the traffic is northbound). The potential disruption of highway traffic is considered a very minor impact, however, since the tonnage figures cited above would imply an average of only 2 unit trains per week.

Water transportation, which will involve greater tonnages than either highway or rail transportation, is not expected to have significant impacts upon the waterway system. Ample dockage space will be provided to allow efficient use of the waterfront area at the plant site. The traffic created by the proposed cement plant should be accommodated without disrupting the other anticipated traffic in the ship channel. The downriver shipments of limestone, clay, sand, and iron ore will increase by 5 to 10 percent the total tonnage passing through the Mobile harbor area and should not create any significant congestion problems.

The construction and operation of the proposed Ideal Basic Industries manufacturing facility could have both positive and negative effects upon land value in nearby areas. The positive effects would relate to employment opportunities at the plant and the general stimulus to economic growth in the industrial park area. The negative effects would involve dust and noise levels as described in the Air Quality and Noise sections. The marketability of residences in the area surrounding the cement plant has been judged to be good because of the demand for housing from industrial workers. The homes which would be subject to the greatest impact will be taken for the ship channel project or the land will probably be converted to industrial use. These takings and conversions would occur without the proposed cement plant; therefore, the impact on land values, although of moderate magnitude to some remaining residences, is considered to be of low significance in the area. These reversible effects will be short-term during construction and long-term during the operation of the plant.

## MITIGATING MEASURES

An aspect of the construction phase which will minimize social impact will be the recruitment of local construction workers rather than utilization of an imported labor force. The feasibility of this policy is demonstrated by the past success of Ideal's engineering contractor (Brown & Root, Inc.) in drawing upon the Mobile area labor force for other local projects. An important action associated with permanent operations will be the orderly transfer of workers from the existing Ideal Basic Industries plant in Mobile to the new facility at Theodore.

An environmental safeguard that will minimize effects of construction and plant operation upon land use, land value, and residential amenity will be the preservation of a vegetated buffer strip at least 90 meters (300 feet) wide along the eastern margin of the property and the 20-meter (65-foot) high limestone storage area between the facility and this greenbelt.

Possible mitigating actions that could be undertaken by Ideal pertain to traffic impacts; for example, construction shifts and cement deliveries conceivably could be scheduled to avoid peak-hour traffic flows on nearby highways.

## ALTERNATIVES

The no-action alternative would result in the loss of substantial economic benefits to be generated by the cement plant project, with only marginal gains in terms of avoiding adverse socioeconomic impacts. Other than the site location alternatives discussed in the Site Selection section, there are no practical alternatives for the socioeconomic aspects of the proposed cement plant.

## QUARRY SITE

### LOCATION

The Gaillard tract, proposed as the limestone quarry site, is located on the Alabama River approximately 180 kilometers (110 river miles) north of the Theodore plant site. This 1,633-hectare (4,035-acre) tract consists of two land parcels under different ownership (see Figure 18). The 739-hectare (1,826-acre) northern portion was purchased by Ideal Basic Industries in 1953 and 1959, and until recently consisted of timberland. The southern portion of 894 hectares (2,209 acres) is owned by Mr. Howard McWilliams, a cattle rancher. Recent agreements between the two owners have allowed Mr. McWilliams to harvest timber and develop most of the Ideal Basic Industries property as improved pasture, while Ideal Basic Industries has acquired quarrying rights to the McWilliams property. The conversion of land to improved pasture, which is already underway, is an independent action not covered by this Environmental Impact Statement.

The quarry site is on the eastern bank of the Alabama River in Monroe County, approximately 5 kilometers (3 miles) southwest of the intersection of Stockton Road (Monroe County Road No. 1) and U.S. Highway 84 (see Figure 19). The site is very isolated relative to other developed land uses. Except for a few houses situated along Stockton Road, the only land uses found within 5 kilometers (3 miles) of the central portion of the site are agriculture and woodland. The geology of the area is characterized by layers of limestone overlaid by sand and gravel deposits of varying thicknesses. The northern portion of the tract is currently being clear cut and converted to improved pasture, whereas the southern portion already consists primarily of pasture with a few planted fields.

On the proposed quarry site, there are four large creeks which flow into the Alabama River. In descending order from north to south they are: McGirts Creek, Thompson Mill Creek (also known as Marshalls Creek),

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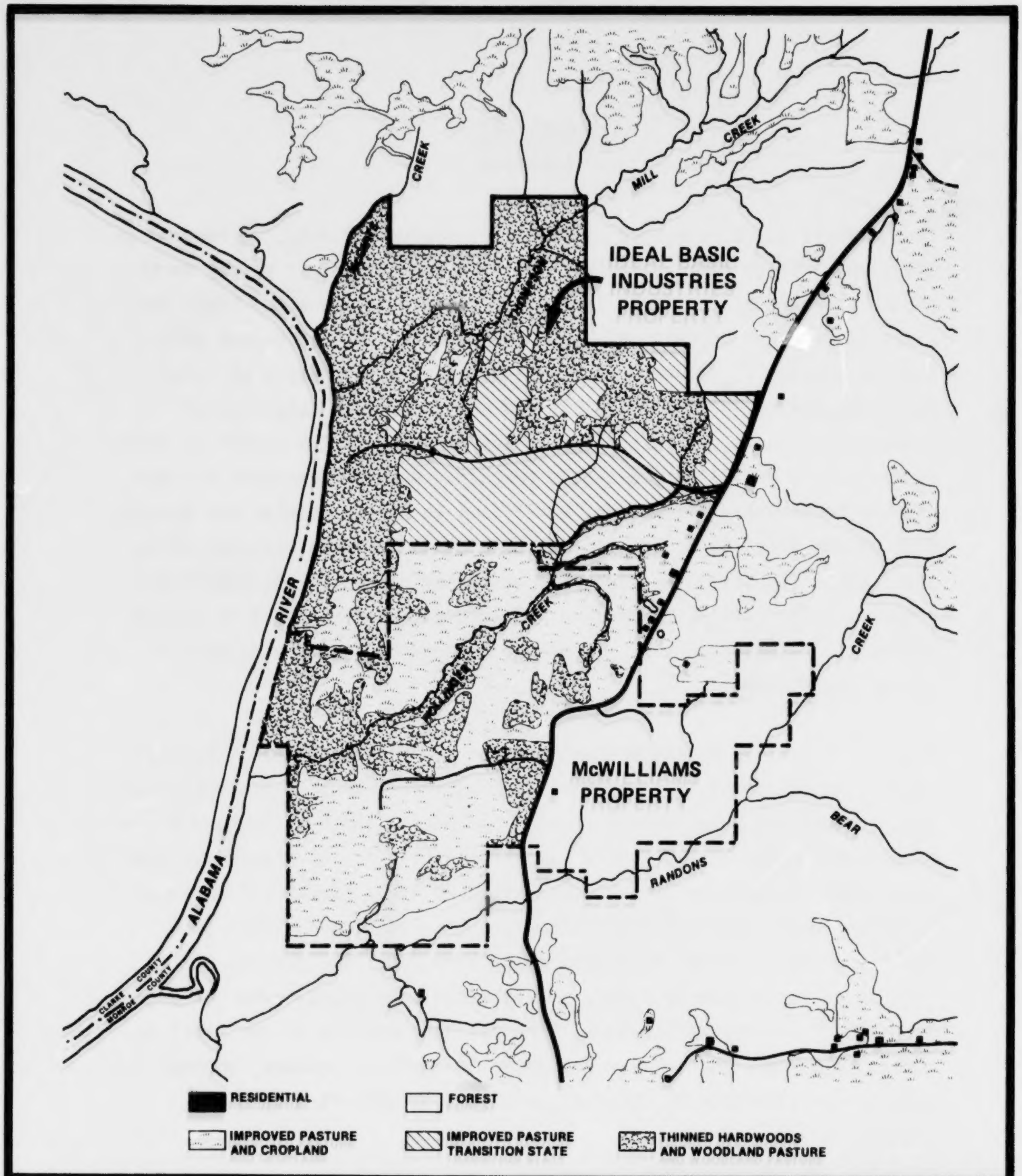
CREEK
MILL
CREEK
IDEAL BASIC INDUSTRIES PROPERTY
RIVER
ALABAMA
CREEK
McWILLIAMS PROPERTY
CREEK
BEAR
RANDONS
CLARKE COUNTY
MONROE COUNTY
RESIDENTIAL
FOREST
IMPROVED PASTURE AND CROPLAND
IMPROVED PASTURE TRANSITION STATE
THINNED HARDWOODS AND WOODLAND PASTURE

**Figure 18**
PRESENT LAND USE IN THE VICINITY OF THE PROPOSED IDEAL BASIC INDUSTRIES QUARRY SITE

0 0.5 1
SCALE IN KILOMETERS

SOURCE: Environmental Science and Engineering, Inc., 1977.

REGION IV
U.S. ENVIRONMENTAL PROTECTION AGENCY ENVIRONMENTAL IMPACT STATEMENT FOR IDEAL BASIC INDUSTRIES

**PROPOSED GAILLARD QUARRY**
**MONROE COUNTY, ALABAMA**

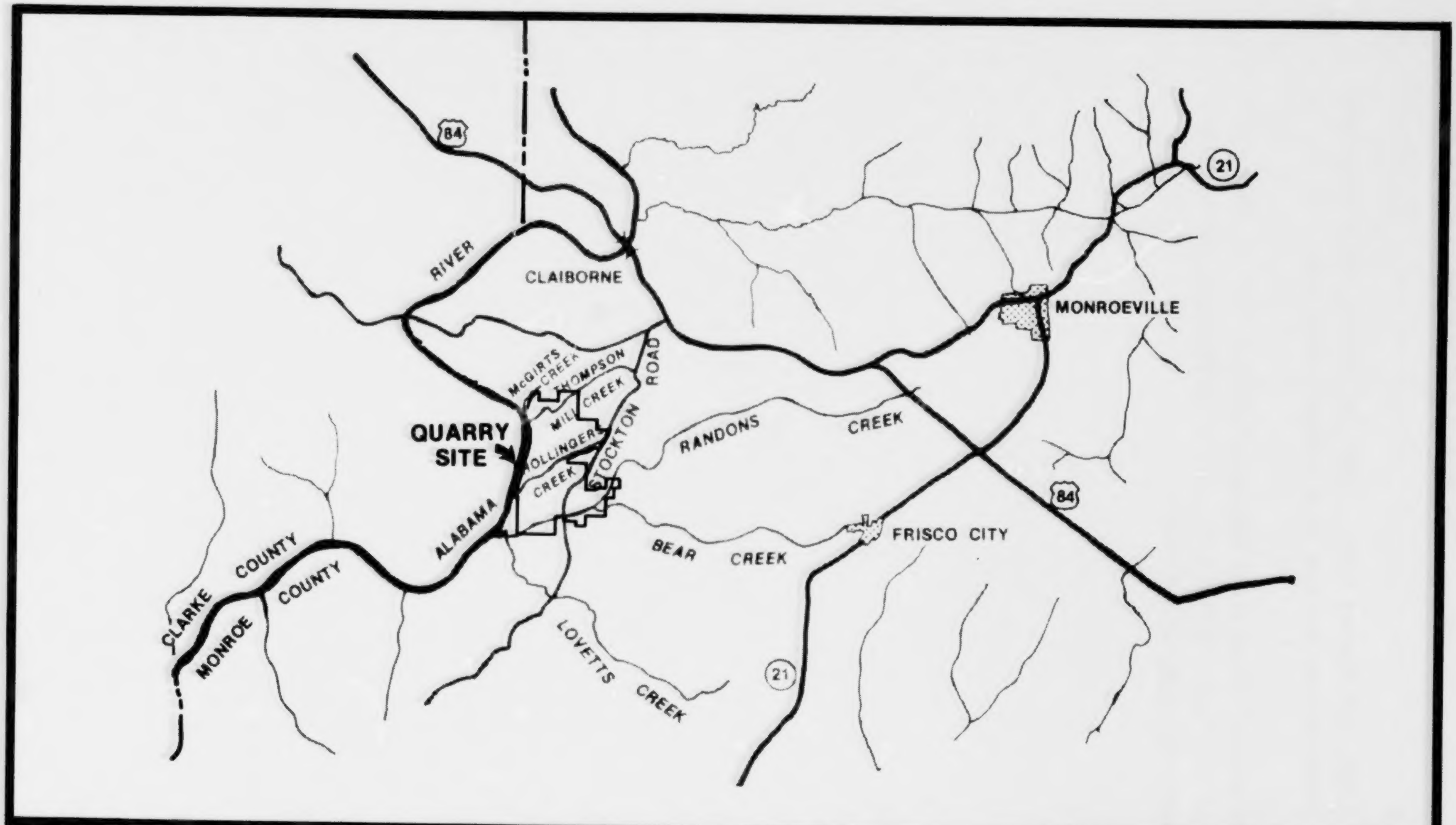
RIVER
CLAIBORNE
84
21
MONROEVILLE
McGIRTS CREEK
THOMPSON
CREEK
MILL
HOLLINGER
CREEK
STOCKTON ROAD
QUARRY SITE
RANDONS CREEK
ALABAMA
BEAR CREEK
FRISCO CITY
CLARKE COUNTY
MONROE COUNTY
LOVETTS CREEK

Figure 19
QUARRY SITE VICINITY

0 5 10
SCALE IN KILOMETERS

SOURCE: Environmental Science and Engineering, Inc., 1977.

REGION IV
U.S. ENVIRONMENTAL PROTECTION
AGENCY ENVIRONMENTAL IMPACT
STATEMENT FOR IDEAL BASIC INDUSTRIES

**PROPOSED GAILLARD QUARRY**
**MONROE COUNTY, ALABAMA**

Hollinger Creek, and Randons Creek. They are shallow creeks which have sand and gravel bottoms and flow in a southwest direction.

Bluffs and outcrops occur along the western boundary of the property adjacent to the river. Relief moderates considerably to the east as well as north and south of the site.

# PROJECT DESCRIPTION

## CONSTRUCTION

Construction of the limestone quarry facility will last 18 months. The construction project will cost $12,000,000 in 1977 dollars and will employ an average of 133 persons, with a peak employment of 250 workers.

About 40 hectares (100 acres) will be cleared initially for construction of the access road, main buildings, and stockpile area. Approximately 570,000 cubic meters (750,000 cubic yards) of material will be moved during the grading of the cleared areas. The limestone will be stockpiled, and most of the overburden (supplemented by clay materials from several on-site deposits) will be utilized to construct earthen dams for clarification basins. Final grade will slope toward the clarification basins. Prior to construction of the basins, temporary measures such as berming and terracing will be used to control sediment. Roadways and work areas at the site will be kept moist to suppress dust. Land-clearing wastes will be disposed by chipping for mulch and/or by pit burning. Other construction debris will be hauled to the Monroe County Landfill.

Conveyors and limestone breakers will be set up in the immediate vicinity of the limestone storage area. Construction of the docking facility will not require dredging, as the depth of the Alabama River in the dock area is already adequate. The access road to the quarry site will be surfaced in order to minimize dust emissions and will be constructed with bridges and culverts to maintain natural drainage of existing creeks. The project will include construction of a 38,000-liter (10,000-gallon) underground diesel fuel tank and an underground gasoline storage tank of approximately 23,000 liters (6,000 gallons).

## QUARRYING PROCESS

The proposed quarry will extract 2.4 million metric tons (2.7 million tons) of limestone (wet basis) per year from an average of 14 hectares (35 acres) of land. Up to 80 percent of the site can be mined economically with present quarrying techniques; the recoverable reserves exceed 136 million metric tons (140 million tons). Thus, the effective life of the facility is greater than 50 years. The overall quarrying process will involve the following six types of activities, which are diagrammed in Figure 20:

1. Overburden removal
2. Quarrying
3. Crushing
4. Storage
5. Barge loading
6. Reclamation.

Soil overburden will be removed by dozers and scrapers in order to expose the underlying layers of limestone. The overburden will be taken to storage areas, used directly in land reclamation, or used to construct dams for the clarification basins which will provide stormwater runoff control. Overburden storage areas will be seeded where practical. Depending upon the mining sequence chosen, material may accumulate in these areas for up to 5 years until an equilibrium between mining and reclamation is reached. Thereafter, quarrying and land reclamation will proceed at equivalent rates in terms of acreage and the quantities of overburden handled.

The material quarried will be a combination of Glendon, Marianna, Red Bluff, and upper Ocala limestones. Limestone deposits vary up to 28 meters (95 feet) in thickness. The limestone will be quarried to a level just above the bottom of the lower Ocala limestone layer (see Figure B.G.14 in Appendix B, Baseline). Quarry activities will begin with the processing of material stockpiled during construction and will move progressively away from the stockpile area. Dozers with special

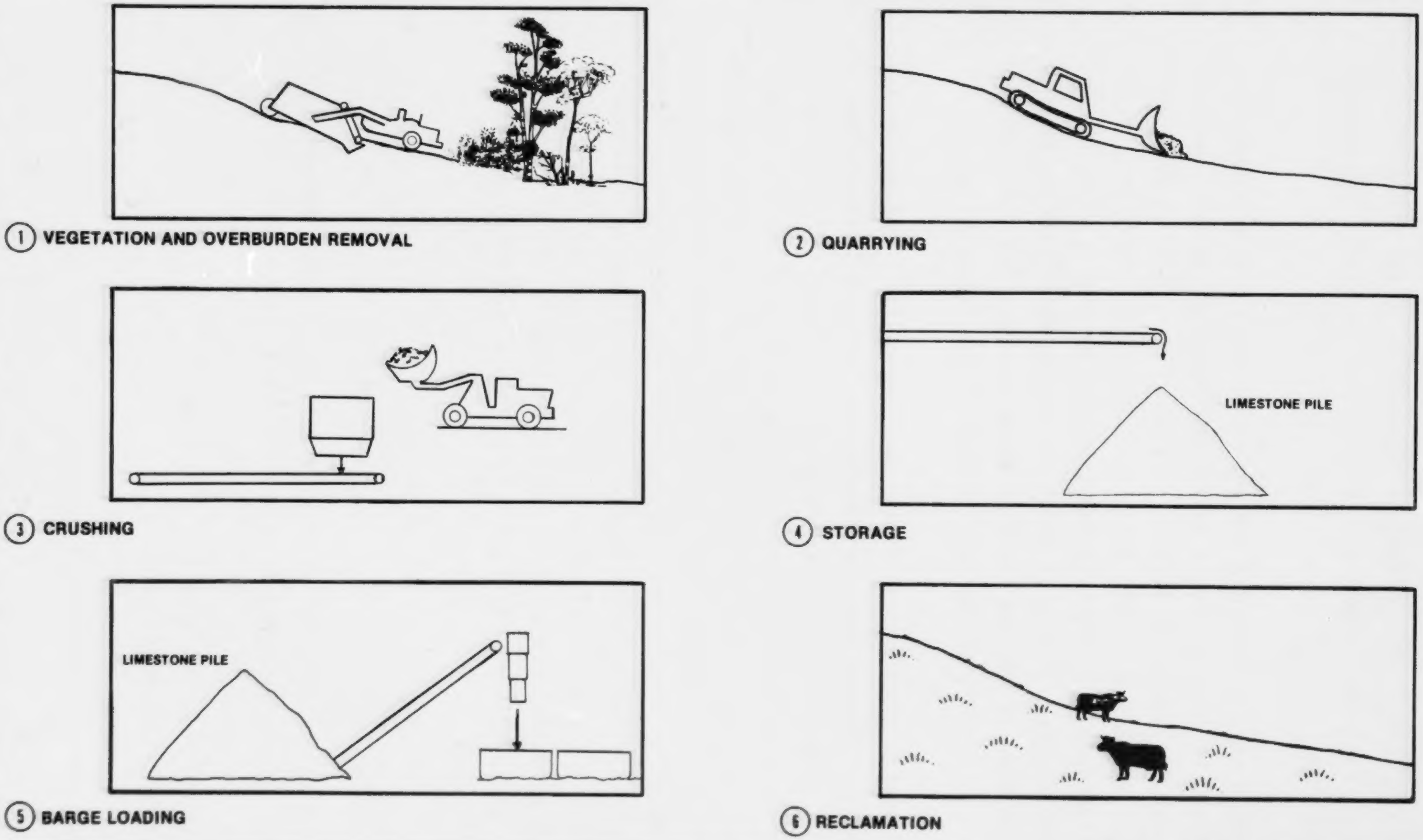
① VEGETATION AND OVERBURDEN REMOVAL
② QUARRYING
③ CRUSHING
④ STORAGE
LIMESTONE PILE
LIMESTONE PILE
⑤ BARGE LOADING
⑥ RECLAMATION

Figure 20
STEPS OF PROPOSED QUARRY PROCESS

SOURCE: Environmental Science and Engineering, Inc., 1977.

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ripping equipment will be used to loosen the limestone and push it down slope; blasting is not anticipated. A total of up to 120 hectares (300 acres) will be involved in active quarrying and overburden storage at any given time.

The limestone's natural moisture content of 22 percent should reduce potential fugitive dust emissions during quarrying operations; however, a dust suppression system is planned. In order to control sedimentation problems, all stormwater runoff from land affected by quarrying, overburden storage, or unvegetated reclaimed lands will be directed to clarification basins. Figure 21 shows the quarry areas and the basins that could be used during the first 15 years of operation. The basins will be formed by constructing earthen dams across low-lying areas.

Front-end loaders, rippers, and dozers will convey the limestone to a portable breaker located near the quarry face, which will reduce the material to a size less than 15 centimeters (6 inches). The crushed limestone will be conveyed either to storage or directly to the barge loading facility. Barge loading (see Figure 22) will be accomplished by a conveyor with a telescoping boot for control of dust emissions. Every 20.5 hours a set of four barges will leave for the cement plant. Unlike the quarrying operations, which normally will be limited to a 40-hour work week, barge loading may require two 8-hour shifts per day in order to keep pace with the arrival of a new set of barges. On an average basis, the quarry will supply 7,788 metric tons (8,585 tons) of wet limestone per day.

## RECLAMATION

The objective of the reclamation program will be to grade and vegetate the area for use as pastureland. The most significant aspects of the reclamation plan are:

1. Controlling soil erosion;
2. Controlling water runoff;
3. Developing wildlife habitat;
4. Monitoring environmental quality.

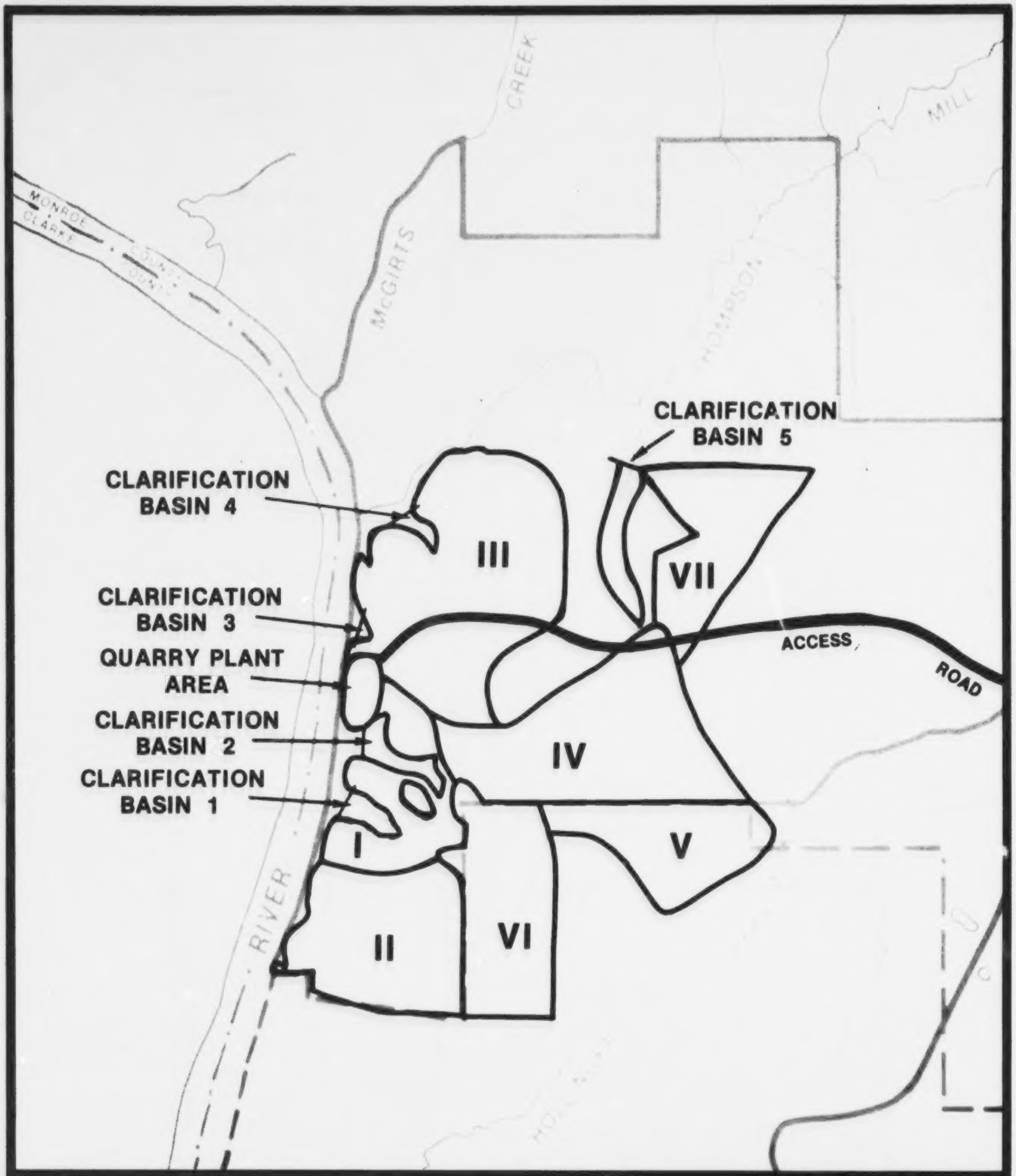
CREEK
MILL
MONROE
CLARKE
COUNTY
COUNTY
McGIRTS
THOMPSON
CLARIFICATION BASIN 5
CLARIFICATION BASIN 4
III
VII
CLARIFICATION BASIN 3
QUARRY PLANT AREA
ACCESS ROAD
CLARIFICATION BASIN 2
IV
CLARIFICATION BASIN 1
V
I
RIVER
II
VI

Figure 21
MINING AREAS
(FIRST FIFTEEN YEARS)

0 0.5 1
SCALE IN KILOMETERS

SOURCE: Environmental Science and Engineering, Inc., 1977.

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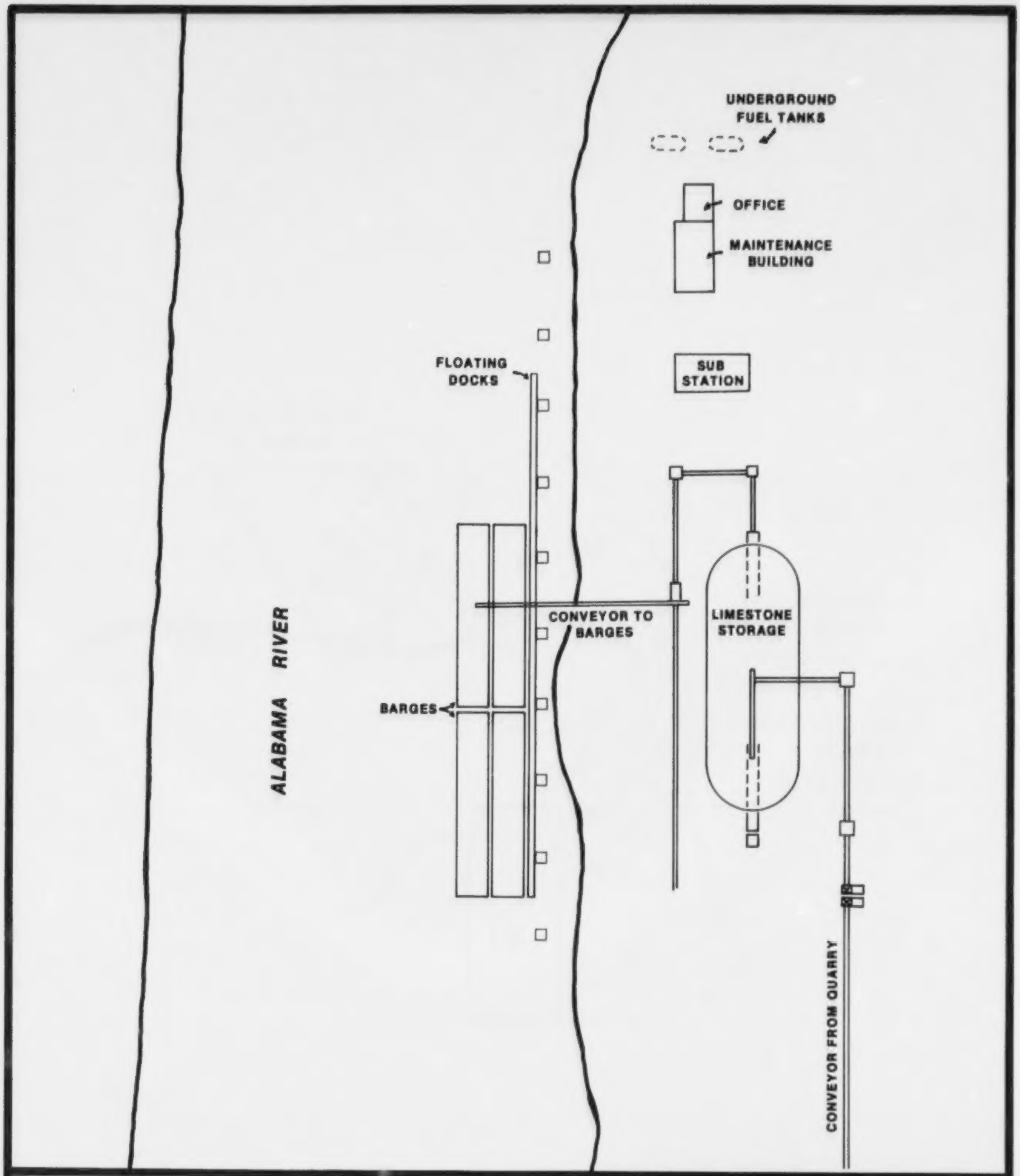
UNDERGROUND FUEL TANKS
OFFICE
MAINTENANCE BUILDING
SUB STATION
FLOATING DOCKS
CONVEYOR TO BARGES
LIMESTONE STORAGE
ALABAMA RIVER
BARGES
CONVEYOR FROM QUARRY

Figure 22
SCHEMATIC LAYOUT OF WATERFRONT DEVELOPMENT

0
1000
SCALE IN METERS
N

SOURCE: Brown & Root, Inc., 1977.

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After the fifth year of quarrying, approximately 14 hectares (35 acres) will be reclaimed each year. Soil on reclaimed land will be compacted to ensure soil stability and graded to minimize erosion. Contour grading will be used on the steeper slopes when necessary. Reclaimed areas will be seeded and will be drained into clarification basins until the area is revegetated.

The removal of limestone will lower the land elevations in quarried areas by an average of 7.6 meters (25 feet), and the cumulative effect of quarrying and reclamation will be a moderate reduction in land surface gradients. Transitional zones between disturbed and undisturbed areas will be graded to minimize slope differences, with no slopes exceeding 3 to 1.

## RESOURCE UTILIZATION

Up to 80 percent of the 1,633 hectares (4,035 acres) may be quarried during the active life of the project. Quarrying will constitute a temporary use of the land, in that the land will be returned to its previous use--improved pasture. However, some slope and elevation characteristics will be altered.

The quarry will have 4.18 kilovolt electric service supplied by the Alabama Electric Cooperative or the Alabama Power Company and will utilize 3.0 megawatts of electricity. An aboveground transmission system is planned to be located within the access roadway corridor. Potable water for sanitary facilities will be supplied by a deep well with a pumping capacity of 40 liters (10 gallons) per minute. Water for dust suppression will be obtained from the clarification basins. The quarry will generate about 1,800 liters (475 gallons) per day of sewage which will be disposed on site by means of a septic tank and soil absorption system. Quarry operations will employ a total of 19 persons and will generate about $400,000 per year in direct salaries. The quarried limestone will be transported to the cement plant at the average rate of 7,788 metric tons (8,585 tons) per day.

## TRANSPORTATION

The limestone will be loaded onto barges for transportation down river to the cement plant. A tow consisting of four barges will leave the site each day and will follow a seven-day-per-week schedule.

## LAND USE SETTING

### PRESENT LAND USE

As shown in Figure 18, the present land use in the vicinity of the proposed quarry site consists of forested lands, improved pasture and croplands, improved pasture (transitional state), thinned hardwoods, and woodland pasture. There are several single family residences in the area, but by comparison to the other land uses, they represent a very small proportion of the total land area.

Most of the residential units are located along Stockton Road. All dwellings on this road are at least 1 kilometer (0.6 mile) from the closest proposed areas which will be quarried during the next 15 years.

The property is presently devoted to agricultural use. Much of the southern half is improved pasture with some fodder crops. The north-central portion of the site has been recently cleared and is in the transitional state to improved pasture. North of this area and along the bank of the river are thinned hardwoods. Although some of the hardwood areas have been harvested more than others, they are all fenced and accessible to grazing cattle. Improved pasture and croplands are scattered around the perimeter of the property to the north, east, and south. All other lands within a 2- to 3-kilometer (1- to 2-mile) radius of the Ideal property are heavily forested.

### FUTURE LAND USE

Present land use trends are expected to prevail in the future (1992), with most lands in the vicinity remaining predominantly in agricultural and forest uses.

# AIR QUALITY

## BASELINE CONDITIONS

The quarry site is located in a remote area of western Monroe County which has very little industrial activity. Several small stationary air pollution sources are in operation in Monroe County; however, none of these sources is in the immediate vicinity of the quarry site, and only very small quantities of particulate matter are emitted. Several small sources of sulfur dioxide and particulate matter emissions are located in Clarke County, to the east of the quarry site. None of these sources is located within 24 kilometers (15 miles) of the site.

Because of the lack of major industrial activity near the quarry site, ambient sulfur dioxide levels at the quarry site should be near zero. Ambient total suspended particulate matter (TSP) levels should be between 20 and 30 ug/m$^3$, approaching natural background levels for the southeastern United States. Figure 23 plots the suspended particulate concentrations at the two ambient air quality monitoring stations closest to the quarry site. These are stations located at Evergreen in Conecuh County and at Grove Hill in Clarke County. No significant patterns are indicated other than relatively low concentrations overall.

In the future, sulfur dioxide and TSP levels at the quarry site will probably increase slightly due to the influence of the pulp mill being constructed approximately 11 kilometers (7 miles) north of the site.

## RELEVANT PROJECT CHARACTERISTICS

Construction activities such as land clearing, grading, roadway construction, excavation, and other heavy machinery operations, are potential sources of fugitive dust. Other pollutant sources during construction are burning of vegetative wastes and vehicular exhausts. The emission sources associated with permanent quarry operations

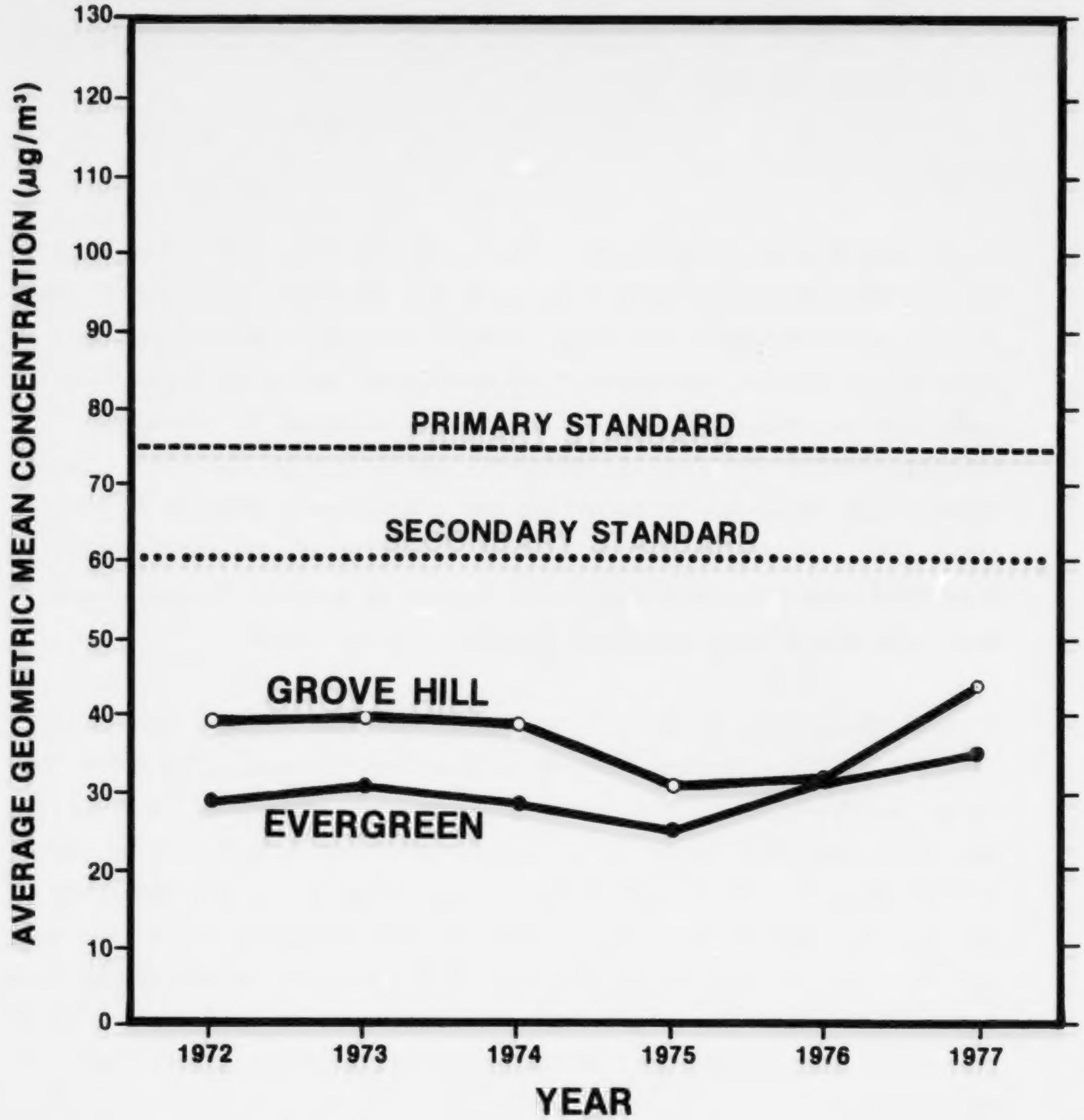

Figure 23
TRENDS IN AMBIENT TOTAL SUSPENDED PARTICULATE MATTER CONCENTRATIONS, RURAL ALABAMA IN THE REGION OF THE PROPOSED IDEAL QUARRY SITE, 1972-1977

SOURCE. Alabama Air Pollution Control Commission, 1978.

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include the processes of quarrying, crushing, conveying, storing, and loading of limestone. As at the plant site, effective methods of fugitive dust control, such as water sprays, will be utilized during both construction and operations.

## IMPACTS

Construction activities at the proposed quarry site are expected to have short-term air quality impacts in the immediate vicinity of the area being developed. The major effects will be fugitive dust from clearing activities and smoke from burning of land-clearing wastes. Levels of suspended particulate matter are expected to increase; however, Ambient Air Quality Standards should not be exceeded. These impacts are rated low in magnitude and significance because of their short-term, reversible nature and the isolation of the construction area from sensitive land uses. The impact of burning is considered avoidable since other means of disposal are available.

In evaluating the air quality impacts of permanent operations, a distinction is drawn between dust emissions from the quarrying areas and emissions from the other areas (i.e., breakers, conveyors, stockpile, and barge loader). Water sprays can be utilized effectively in the latter case, but not in the quarry areas. Therefore, the magnitude of air quality impacts is rated as moderate for quarrying activities and low for other activities at the site. Significance is considered to be low in both cases due to the lack of receptors, i.e., the isolation of the area. The impacts will be long-term (life of the quarry) but reversible.

It appears that the PSD requirements will not be applicable to the quarry operations because the potential emissions are less than 227 metric tons (250 tons per year). A review of the air permit applications should be completed prior to conducting the public hearing for this project. If the PSD requirements are determined to be applicable, it is expected that the associated impacts on air quality and the selection of control equipment will not be significantly different than those stated in this document.

## MITIGATING MEASURES

Aside from the effects of burning during construction, the important air quality impact associated with the proposed quarry is the emission of fugitive dust. The inherent moisture content of the wet limestone rock to be quarried will reduce significantly the potential fugitive dust emissions. In addition, the use of water sprays and the use of "boot" type loaders at the barge loading facility will lessen fugitive dust impacts in the local area. The surfacing of the access road will limit fugitive dust emissions from that source. The disturbed but non-active areas will be revegetated to reduce the amount of area with a dust-generation potential.

The adverse effects of burning will be reduced by conducting this activity only during periods of favorable atmospheric dispersion. The use of an air-blower type pit burner will burn the materials more efficiently and with less smoke than typical open burning. Chipping of some of the wastes for mulch will reduce the amount of material to be burned.

Mitigating measures that could be taken during construction and operation are the use of chemical stabilizers and wind breaks to decrease fugitive dust emissions. These measures are appropriate to use in inactive areas but are not practical for use in the quarry areas.

## ALTERNATIVES

The expected air quality levels in the area in 1992 (the no-action alternative) should be similar to present conditions, with a possible slight increase in particulate matter and sulfur dioxide from the Parsons and Whittemore pulp mill. The alternative actions related to air quality impacts are landfilling vegetative wastes either on-site or at the Monroe County Landfill and enclosing and venting conveyors to a particulate matter control device (baghouse).

Landfilling of the wastes would eliminate the expected smoke emissions. However, on-site burial would disturb additional land areas and would create an unstable surface contour due to the decomposition of the waste. This area would not be stable and could not be used for pastureland. Hauling the wastes to the Monroe County Landfill would involve approximately an 80-kilometer (50-mile) round trip per load, and access on-site during the first few months of construction might be a problem.

Enclosing conveyors and treating dust emissions would achieve a higher degree of removal than water sprays, but their costs would not be warranted since the impact of the proposed system is already considered low.

The proposed actions are considered to be environmentally acceptable and more practical than the alternatives.

# NOISE

## BASELINE CONDITIONS

The proposed quarry site is an uninhabited tract of land that is being progressively converted from forest to improved pasture. The only noise sources are wildlife, natural phenomena such as wind and water, infrequent river traffic, and a light-duty public road that crosses the extreme eastern section of the tract. Noise was monitored at three stations in the southern, central, and northeastern portions of the site (shown on Figure 24). The levels monitored were low and related to the natural phenomena mentioned above. These measured noise levels probably would not increase in the future (by 1992) without the proposed quarry operation.

## RELEVANT PROJECT CHARACTERISTICS

Noise during quarry construction will originate from earthmoving and building of structures, conveyors, improvement of docking facilities, roads, and clarification basins. Noise will also be generated by commuter traffic of the construction workers.

For purposes of projecting noise levels at the quarry site, the effects of the equipment were combined into nine large theoretical point sources (see Figure 24 for projected noise levels).

Operational noise from the quarry will originate primarily from the removal of overburden, quarrying, limestone handling, and barge loading. Automobile commuter traffic to and from the quarry site and tugboat traffic due to movement of the limestone barges will be additional noise sources. However, the primary source of operational noise will be the equipment used in the active quarry areas. Figure 25 projects the boundary of the 55 dBA sound contour expected during the first 15 years of operations.

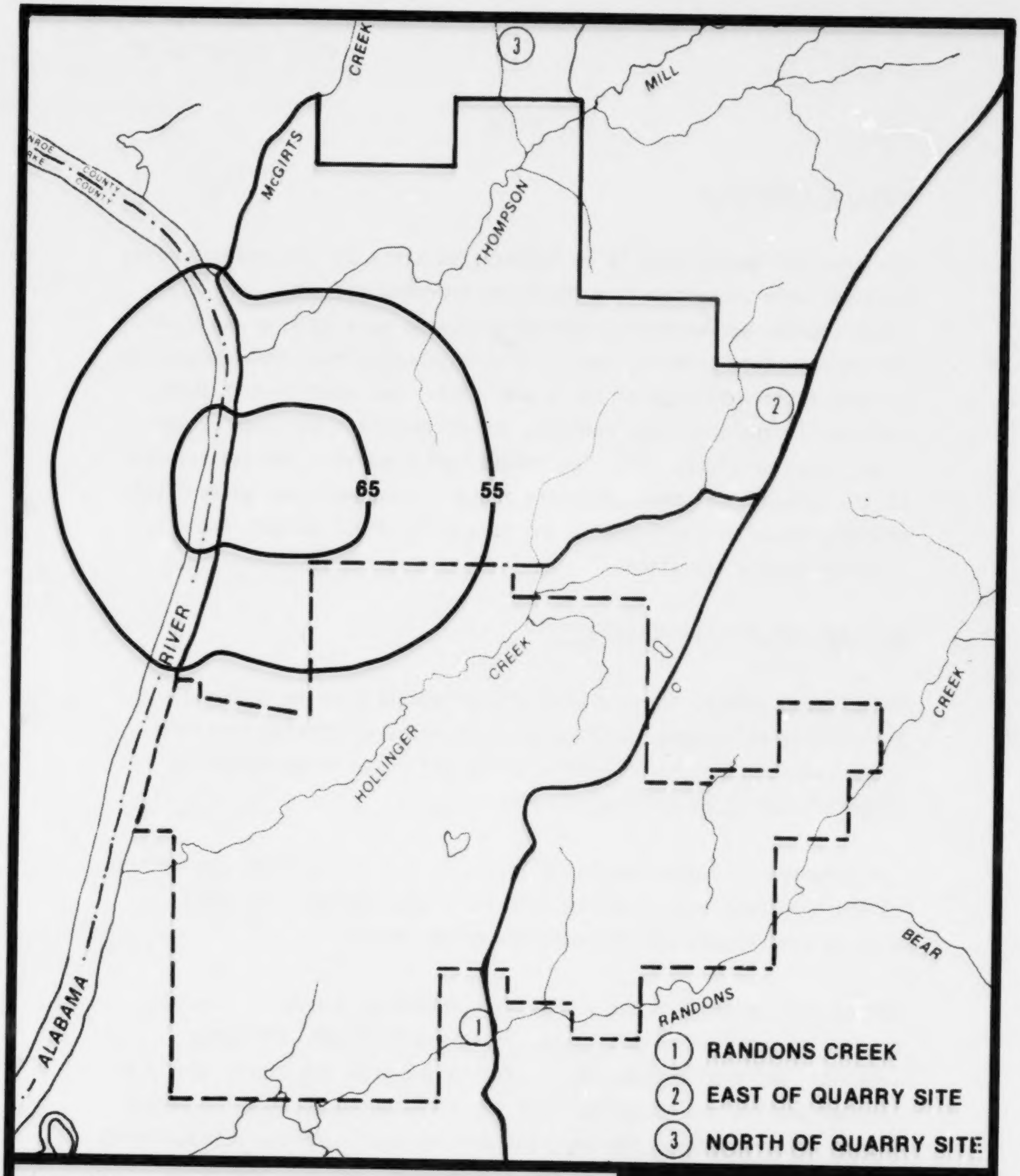
CREEK
3
MILL
McGIRTS
THOMPSON
COUNTY
COUNTY
65
55
2
RIVER
CREEK
HOLLINGER
CREEK
BEAR
RANDONS
1
ALABAMA
1 RANDONS CREEK
2 EAST OF QUARRY SITE
3 NORTH OF QUARRY SITE

Figure 24
EQUAL SOUND LEVEL ($L_{dn}$) CONTOURS SURROUNDING THE QUARRY SITE DURING CONSTRUCTION ACTIVITIES

0 0.5 1
SCALE IN KILOMETERS

SOURCE: Environmental Science and Engineering, Inc., 1977.

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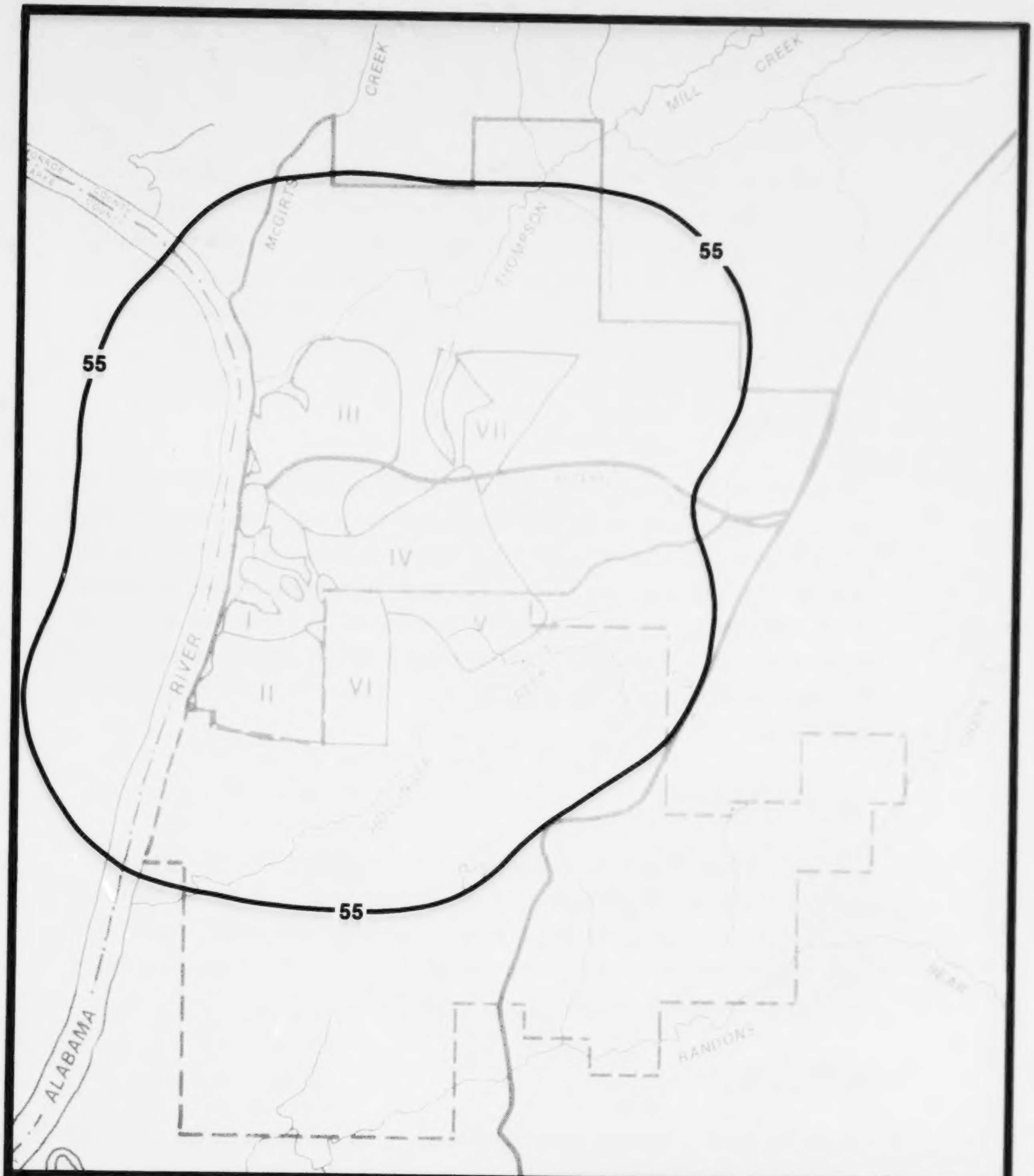
CREEK
MILL
CREEK
McGIRTS
THOMPSON
55
55
55
III
VII
IV
I
V
II
VI
RIVER
ALABAMA
BANDON
BEAR
CREEK

**Figure 25**
**ESTIMATED BOUNDARY OF SOUND LEVEL, $L_{dn}$ of 55 DECIBELS, SURROUNDING THE QUARRY SITE DURING OPERATION**

0 0.5 1
**SCALE IN KILOMETERS**

**SOURCE: Environmental Science and Engineering, Inc., 1977.**

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## IMPACTS

The sphere of noise influence due to quarry construction extends somewhat less than 1 kilometer (0.6 mile) from the construction area, with somewhat greater noise transmission to the west than elsewhere because the river does not attenuate noise levels. The only off-site effects will involve the land directly across the river from the quarry site, which is an uninhabited floodplain area. The noise impacts of construction are considered low in magnitude and significance, short-term and reversible.

The sphere of noise influence due to initial quarrying operations will be similar to the noise impacts during construction. However, the zone of influence will migrate along with quarry operations, rather than remaining centered near the river. No existing residences are projected to be impacted by a noise level greater than 55 dBA from the quarrying activities. Therefore, the magnitude and significance of noise impacts during permanent operations will be low. Impacts will be long-term but reversible.

## MITIGATING MEASURES

Equipment with noise suppression systems, complying with the Walsh-Healy Act and the requirements of the Occupational Safety and Health Administration (OSHA) and the Mining Enforcement and Safety Administration (MESA) will be used. There are no feasible mitigating measures that would reduce noise levels at the quarry site.

## ALTERNATIVES

If the quarry is not constructed (the no-action alternative), the 1992 noise levels at the site should be similar to present conditions. There are no practical alternatives related to noise generation during construction and quarrying activities.

# SOLID WASTE

## BASELINE CONDITIONS

Only one approved sanitary landfill exists in Monroe County. The site is located near Monroeville and handles putrescible, non-putrescible, and bulky wastes. The site, which is approximately 10 hectares (25 acres) in area, operates a multi-lift system of disposal. The site, which has been in operation since 1972, has an estimated 2 to 3 years of capacity remaining. The county plans to use surrounding property for future operations once the present site is depleted. Since the area is rural, there is adequate land for well over 15 years use. Burning of land-clearing wastes is permitted by the Alabama Air Pollution Control Commission.

## RELEVANT PROJECT CHARACTERISTICS

Solid wastes will be generated during the following phases of quarry construction: land clearing, grading, and erection of structures and equipment. Approximately 40 hectares (100 acres) will be cleared for the access road, main building, and stockpile area. The vegetative wastes, consisting of trees and undergrowth, will be chipped for mulch and/or burned. The amount of wastes that will be chipped will depend on the size of the pieces and the related time and expenses. The burning will be performed in an air-blower type pit burner and conducted only during favorable dispersion conditions. Grading of the cleared areas will involve moving 570,000 cubic meters (750,000 cubic yards) of overburden and limestone. Most of the removed material will be used for construction of clarification basin dams and roadways, or stockpiled to supply limestone for initial crushing operations. The remaining overburden will be stored for later reclamation use. Construction debris from the erection of structures and buildings, consisting of lumber, concrete, paper wastes, and metal scraps, will be disposed off-site in the Monroe County Landfill.

Operation of the proposed quarry is expected to generate 137 metric tons (151 tons) of solid waste per year. About 2.5 metric tons (2.7 tons) of paper and lunchroom waste will be disposed off-site at the county sanitary landfill. Another 1.7 metric tons (1.8 tons) will consist of wastes from the equipment maintenance shop. The oil and metal wastes will be separated and sold for recycling. The remainder of this waste will be taken to the county landfill. The majority of the solid waste [132 metric tons (146 tons)] will consist of settled soil and rock particles that have been removed from the clarification basins in order to maintain capacities. This sediment will be used for reclamation.

## IMPACTS

The impacts of burning of vegetative waste are discussed in the Air Quality section. Disposal of construction debris at the Monroe County Landfill should not have undesirable effects except to deplete slightly the available life of the landfill. These impacts are rated low in magnitude and significance, long-term, reversible, and avoidable.

No major impacts are expected to result from disposal of the solid wastes generated during quarry operation. The use of sediment from the settling basins is consistent with the other reclamation activities and should have a negligible impact. An advantage of disposal at the county site is that landfilling will be performed by a qualified staff working with quantities of other wastes large enough to promote proper disposal techniques. The overall magnitude and significance of solid waste disposal impacts during permanent operations are expected to be low. The impact is considered long-term but reversible since the land could be reclaimed to other land uses.

## MITIGATING MEASURES

No mitigating measures for solid waste disposal have been identified.

## ALTERNATIVES

The alternative of not constructing and operating the quarry would increase slightly the effective life of the county landfill area. No significant differences are expected.

Landfilling, which is the alternative action for chipping and/or burning of the vegetative wastes, is discussed in the Air Quality section.

The solid wastes generated during construction and permanent operations at the quarry could be disposed at an on-site landfill area rather than the county-approved landfill. Because of the large size of the quarry tract, a suitable disposal area could be found, and ecological problems are not expected. However, it is not considered very practical for Ideal Basic Industries to maintain an on-site landfill. The commitment of heavy equipment and labor necessary for proper operation of a sanitary landfill would be excessive given the required disposal of only 4.2 metric tons (4.5 tons) of office, lunchroom, and maintenance wastes per year.

# WATER RESOURCES AND GEOTECHNICAL ASPECTS

## BASELINE CONDITIONS

The Alabama River is formed by the juncture of the Coosa and Tallapoosa rivers near Montgomery, Alabama, and flows southwest across the state to join eventually the Tombigbee River and form the Mobile River. The closest river gage to the proposed quarry site is 37 kilometers (23 miles) upstream at the Claiborne Lock and Dam. The Alabama River drains approximately 57,000 square kilometers (22,000 square miles) at this point and has an annual average discharge of 921 cubic meters per second (32,540 cubic feet per second). The flow regime of the river is marked by extreme variability. The recorded maximum and minimum discharges differ by a factor of more than 50, and water surface elevations at the quarry site can vary as much as 10 meters (30 feet) within a single year.

Present freight traffic on the Alabama-Coosa river system consists largely of sand and gravel shipments originating in the lower reaches of the river. The 1976 traffic through the Claiborne Lock and Dam, which should reflect conditions at the quarry site, included an average of only one barge tow and 2.5 other vessels passing either up or down per day.

The proposed quarry site is situated along the outside of a meander on the east side of the Alabama River. Elevations on the property range from 3 meters (10 feet) above mean sea level to over 60 meters (200 feet), with the greatest relief occurring in the area near the river. Surface drainage of the site is generally southwest to the river by way of McGirts Creek, Thompson Mill Creek (Marshalls Creek), Hollinger Creek, Randons Creek, and four small intermittent watercourses designated as Alabama River Tributaries 1, 2, 3, and 4 (see Figure 26).

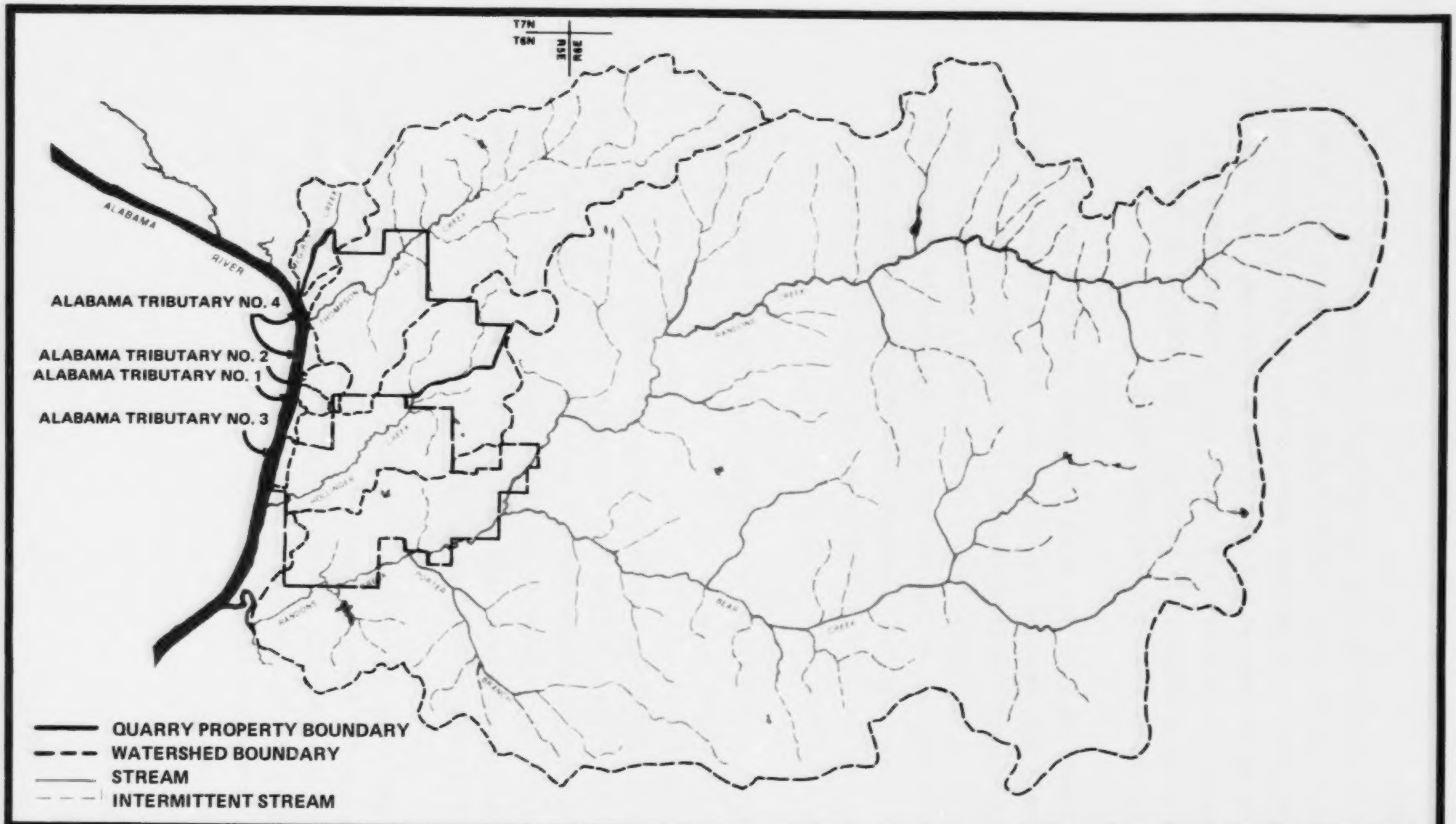
T7N
T6N
R5E
R6E
ALABAMA
RIVER
ALABAMA TRIBUTARY NO. 4
ALABAMA TRIBUTARY NO. 2
ALABAMA TRIBUTARY NO. 1
ALABAMA TRIBUTARY NO. 3
CREEK
THOMPSON
MILL
CREEK
HOLLINGER
CREEK
RANDONS
PORTER
BRANCH
BEAR
CREEK
RANDONS
CREEK
QUARRY PROPERTY BOUNDARY
WATERSHED BOUNDARY
STREAM
INTERMITTENT STREAM

Figure 26

WATERSHED MAP: McGIRTS CREEK, THOMPSON MILL CREEK, HOLLINGER CREEK, RANDONS CREEK, ALABAMA TRIBUTARIES 1, 2, 3, AND 4

SOURCE: Environmental Science and Engineering, Inc., 1977.

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SCALE IN KILOMETERS

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Thompson Mill (Marshalls) Creek has an overall drainage area of 1,777 hectares (4,392 acres), which includes 385 hectares (952 acres) in the northern area of the proposed quarry site. A substantial portion of this land is being timbered and cleared for pastureland. The streambed of Thompson Mill Creek within the quarry site is characterized by a relatively steep gradient (0.97 percent), a substrate of gravel and limerock, perennial flow, and very steep banks.

Hollinger Creek has a smaller overall drainage area [874 hectares (2,160 acres)] than Thompson Mill Creek, but drains a larger portion of the proposed quarry site [592 hectares (1,462 acres)]. Present land use in the watershed consists primarily of pastureland, with ongoing conversions of timberland to improved pasture. Relative to Thompson Mill Creek, Hollinger Creek has a somewhat lower channel gradient, more fine-grained bed material, a lower base flow, and a wider floodplain near the Alabama River.

Randons Creek is much larger than the streams just mentioned in terms of drainage area [14,324 hectares (35,394 acres)]. Only 4 percent of the watershed [506 hectares (1,251 acres)] is located within the quarry site, so that conditions in Randons Creek can be affected to only a limited degree by land use and land management in this area. The dominant influences in the watershed are agricultural land and urban land located to the east. Randons Creek has a lower channel slope, a much wider floodplain, and a bed containing more silt and sand than either Thompson Mill Creek or Hollinger Creek.

McGirts Creek is an intermittent creek which flows in a southwesterly direction into the Alabama River. Part of the creek forms the northern boundary of the property. The area of the McGirts Creek watershed is approximately 161 hectares (397 acres); however, only 30 hectares (73 acres) are within Ideal's property. This area is primarily in native woodland.

Alabama Tributaries 1, 2, 3, and 4 are located adjacent to the Alabama River between McGirts Creek and Hollinger Creek, and have drainage areas of 17, 42, 27, and 34 hectares (42, 104, 68, and 84 acres), respectively. These basins are characterized by steep land slopes, poorly-defined watercourses, and intermittent flows.

Water quality conditions in the Alabama River and the three major streams on the quarry site have been surveyed as part of the present study. There is no evidence of serious water quality problems in the Alabama River other than high levels of suspended solids and turbidity, which are both influenced by seasonality, rainfall, and the agricultural cycle.

At base flow, Thompson Mill (Marshalls) Creek is low in turbidity, suspended solids, nutrients, and organics, but moderately high in hardness, alkalinity, and nitrate-nitrite. The latter characteristics are typical of waters that have extensive contact with limestone formations. The low chlorophyll a values, high dissolved oxygen, and moderate water temperatures observed in Thompson Mill Creek are indicative of a water body that is relatively uninfluenced by human activities. Water quality in Hollinger Creek at low flow has been found similar to Thompson Mill Creek, with the exception that nitrate concentrations are substantially lower and Kjeldahl nitrogen is higher. Thus, there appear to be no significant dry-weather sources of organic pollution. Water temperatures, which are higher than in Thompson Mill Creek, reflect a lack of tree canopy over sections of the streambed where pasture has been developed. Water quality in Randons Creek differs from the other two major streams in that alkalinity, hardness, conductivity, total dissolved solids, and pH are all substantially lower because of less limestone influence on the stream water. Turbidity, suspended solids, and color are relatively high in Randons Creek, but no other water quality problems have been documented.

Some water quality deterioration in these streams can be expected to occur in the future. In the case of Thompson Mill and Hollinger creeks, the changes would be due primarily to land clearance, pasture development, and increased stock loading. Turbidity, suspended solids concentrations, and sedimentation of the stream channel would be increased in the short run, but eventually would decline as land conditions stabilized. Nutrient enrichment would occur as a result of cattle grazing and fertilizer application, and there would be increased loadings of organic material during storm events.

## GEOTECHNICAL CHARACTERISTICS

The geologic formations encountered at the proposed quarry site range from Yazoo Clay at the base through various Eocene and Oligocene limestones, to Pliocene or Pleistocene sands and clays with various soil layers. The formations of economic importance, yielding limestones of commercially acceptable quality, include the upper member of the Ocala Limestone, the Red Bluff Clay, the Marianna Limestone, and the Byram Formation. The complete limestone section was originally about 28 meters (95 feet) thick but has weathered to an irregular surface with varying thicknesses.

The overburden materials (Citronelle Formation and high terrace deposits) are composed of sand, clay, topsoil, and other materials varying in thickness from 0 to 33 meters (110 feet). The overburden is thickest in upland areas and thin or non-existent on the steep slopes near the river.

Several aquifer systems of local importance occur at the quarry site, including the Citronelle and Marianna formations, as well as various Eocene and pre-Eocene units underlying the Yazoo Clay. The Citronelle Formation has relatively low permeability and is discontinuous in extent. The limestone units are high in permeability as a result of solution channeling. Thus, it is likely that the water level in the limestone aquifer system is drawn down near the Yazoo Clay (an impermeable layer) for some distance from the river. This system is actively discharging into the creeks and river. The 14 wells identified near the quarry site are either water table wells obtaining water from the surficial sands, or artesian wells tapping the Lisbon Formation and/or Gosport Sand below the Yazoo Clay. None of the wells surveyed obtained water from the limestone formations.

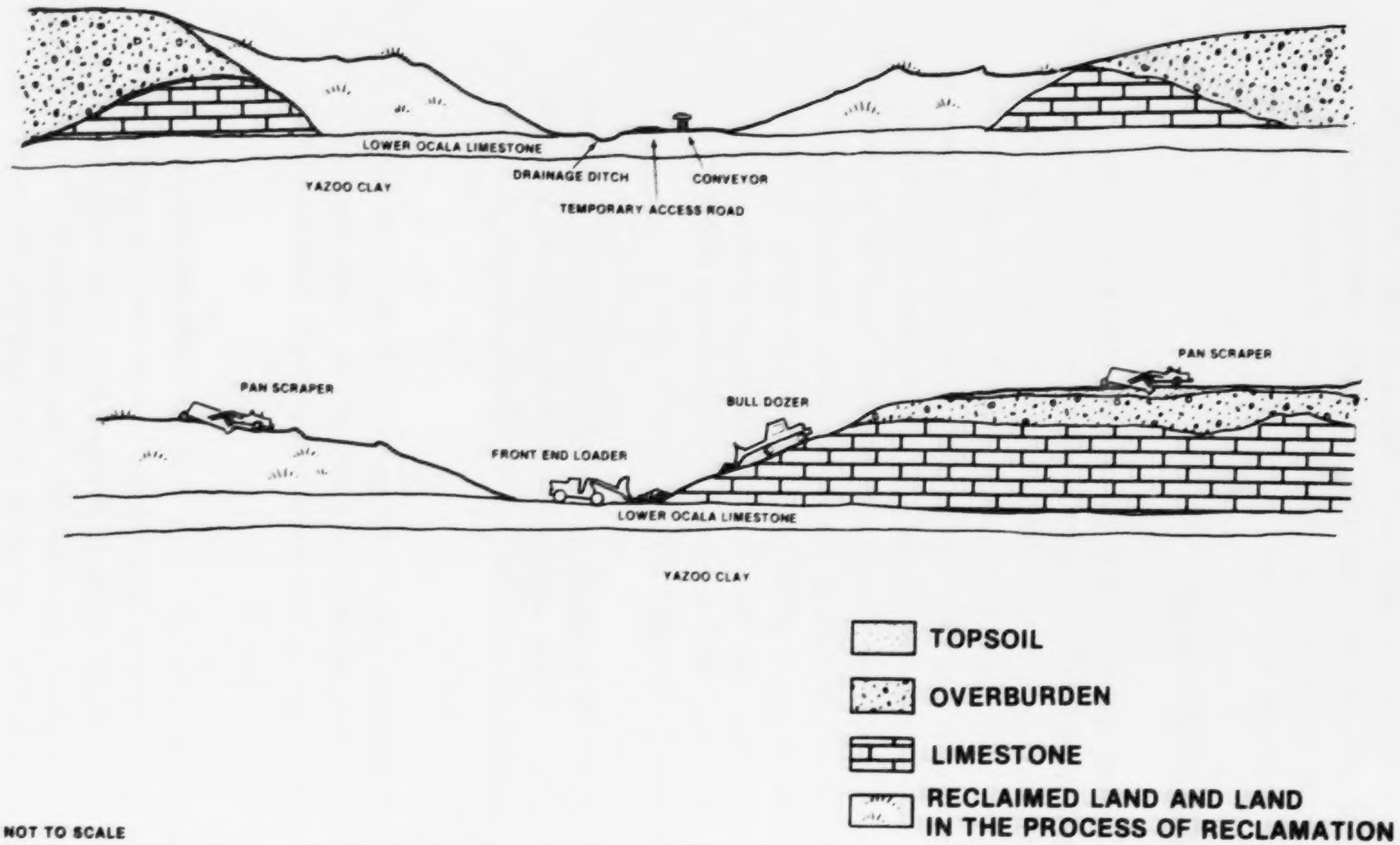
## RELEVANT PROJECT CHARACTERISTICS

The proposed quarry operations will be confined during the first 15 years primarily to the 739-hectare (1,826-acre) northern property owned by Ideal Basic Industries. The construction phase of the project, lasting 18 months, will begin with construction of an all-weather access road to the loading and storage site at the Alabama River, followed by construction of clarification basins 1, 2, and 5 (basins 3 and 4 will be constructed at a later time if they are needed). Clearing and earthwork will be conducted on the loading and storage site, which will involve grading a plateau at an elevation of 21 meters (70 feet). The excavated material will be stockpiled for limestone supply, used as fill in constructing dams, or moved to the Milkhouse Branch (a tributary of Thompson Mill Creek) overburden storage area.

A free-standing mooring structure approximately 194 meters (636 feet) long will be built in the Alabama River so that barges can be secured for loading. Dredging in the river is not anticipated due to sufficient existing depths.

The project will also include a deep well, septic tank with soil absorption system, a 38,000-liter (10,000-gallon) underground fuel oil tank, and a 23,000-liter (6,000-gallon) underground gasoline storage tank.

The mining operations will work away from the limestone storage area. There will be several active quarry areas and at least two active faces at any given time. Where possible, overburden will not be moved twice, but instead will be placed in previously quarried areas as a "haulback" operation (see Figure 27). Overburden which cannot be utilized


LOWER OCALA LIMESTONE
YAZOO CLAY
DRAINAGE DITCH
CONVEYOR
TEMPORARY ACCESS ROAD
PAN SCRAPER
FRONT END LOADER
BULL DOZER
PAN SCRAPER
LOWER OCALA LIMESTONE
YAZOO CLAY
TOPSOIL
OVERBURDEN
LIMESTONE
RECLAIMED LAND AND LAND IN THE PROCESS OF RECLAMATION

DRAWINGS NOT TO SCALE

Figure 27
CROSS SECTIONS OF A TYPICAL QUARRYING AREA

SOURCE: Environmental Science and Engineering, Inc., 1977.

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immediately in this fashion will be conveyed to the Milkhouse Branch watershed for long-term or permanent storage. Topsoil will be stockpiled for up to 5 years at locations where it can be preserved until the receiving areas have been brought up to grade. All topsoil and other stockpiled materials will be graded and seeded to resist erosion until they are used in the reclamation program.

Control of surface runoff from areas affected by mining and reclamation is required by both EPA and the Alabama Water Improvement Commission (AWIC). These requirements will be met by the construction of the clarification basins to treat the runoff from all areas disturbed by storage, mining, and reclamation activities (see Permit and Approval section).

The capacities will be sufficient to store the runoff from all disturbed areas during a 10-year, 24-hour storm event. A settleability study performed on the natural soils and limestones found at the quarry site has indicated that the suspended solids concentration of basin effluent will be less than the standard of 30 milligrams per liter, if the detention time is maintained at 24 hours or greater.

In addition to clarification basins, the erosion controls employed at the site will include revegetation with chipped mulch and with native species of grasses, as both a temporary and permanent stabilization practice; use of contour terracing to reduce velocities of flow across unvegetated surfaces; and ditches and berms to divert runoff away from disturbed areas. Also, a 30-meter (100-foot) setback from streambeds will be maintained for the major creeks and streams.

Land reclamation will involve placement of overburden in thin layers on the previously quarried areas and compaction of each layer to approximately natural conditions. When the final grades are reached, topsoil will be added and compacted, with steps taken if necessary to compensate for any deterioration of topsoil quality during stockpiling (e.g., leaching, loss of micro-organisms). After replacement of soil horizons in a manner to promote revegetation, fertilizer will be added as necessary, and the area will be seeded to the chosen vegetation types. Land will be returned to improved pasture.

The slope gradients of reclaimed land will not exceed 3 to 1. In general, the land surface will be more gently sloping and less irregular than before quarrying. Landforms will be contoured so that there is a smooth transition from disturbed to undisturbed areas. In the course of quarrying operations, it will be necessary to change the direction of surface drainage for some areas. These changes will be due to quarrying requirements and the need to capture all runoff in clarification basins. Although natural drainage patterns will be reinstated where possible during reclamation, there will be a net diversion of surface drainage from Thompson Mill (Marshalls) Creek to the Alabama River, amounting to roughly 10 percent of the on-site land that presently yields surface runoff to the creek. There may also be some changes in groundwater flow patterns, but these will be relatively minor.

## IMPACTS

The initial clearing, site preparation, and road construction activities at the proposed quarry will result in erosion of the land surface during storm events, but sediment transport to surface water bodies will be limited by the presence of clarification basins. The magnitude of water resource impacts due to construction site runoff and stockpile runoff is expected to be low, due to the controls to be implemented. Constructing the docking facility on the Alabama River will have an impact of low magnitude because dredging will not be required. The amount of the particulate material cast into suspension by pile driving should be small. Both of these construction impacts are considered of low significance. These impacts will be short-term and reversible.

During permanent operations at the quarry site, all stormwater runoff from disturbed land will be directed to clarification basins for treatment, and there will be erosion/sedimentation controls as discussed earlier. Because of the proper design of the basins, the total sediment inputs to Thompson Mill and Hollinger creeks should not exceed 30 mg/l except during extreme storm events and should meet the requirements in the Draft NPDES permit (see the Permit and Approval section). The erosion/sedimentation impacts of mining and land reclamation are rated low in both significance and magnitude, long-term but reversible.

Changes in landforms will be irreversible but are not considered significant as environmental impacts (low magnitude and significance). The quarried land will be lowered in elevation by roughly 7.6 meters (25 feet) on the average, with generally reduced slopes and somewhat altered drainage patterns. The reclamation procedures described earlier should leave the land as productive as before, without significant effects upon water resources or other off-site conditions.

The surficial aquifer system involving the sand/clay layers and permeable limestone formations will be disturbed in the immediate vicinity of active quarrying operations. There should not be appreciable effects upon the quantity or quality of aquifer discharges to surface waters. The function of the surficial aquifer will be reinstated as part of land reclamation. Because of the reduced relief, infiltration may be greater than before quarrying, leading to more stable base flow of local streams and reductions in soil loss. The deep aquifer system will not be affected either by quarrying or by land reclamation, because this system is isolated from surface conditions by the impermeable Yazoo Clay. The anticipated impacts will be a localized drawdown in groundwater levels during active quarrying and possible long-term effects on groundwater flows due to a change in soil strata. This impact is assigned low significance and magnitude because it should be confined to areas within 60 meters (200 feet) of each quarry face, and it will not affect wells in the area. This impact is considered long-term and irreversible.

## MITIGATING MEASURES

The environmental safeguards employed to lessen water resource impacts due to the Ideal Basic Industries quarry project will include the use of clarification basins and other sediment controls as described earlier. Stormwater runoff from the major sources of sediment (cleared areas, overburden stockpiles, active quarry areas, and areas being reclaimed) will comply with effluent standards. The project will be planned to reduce erosion by minimizing the extent of cleared, unvegetated areas during both the construction and quarrying phases. Berms, diversion structures, and contour terracing will be utilized to decrease the velocity of overland flow and encourage infiltration. The most important environmental safeguard will be the use of land reclamation techniques that result in viable soil conditions for rapid revegetation.

The mitigative measures that could be employed to minimize water resource impacts would involve even more extensive use of erosion controls such as mulching, seeding, netting, hay bales, sodding, localized ponding, and vegetated buffer strips.

## ALTERNATIVES

The no-action alternative would involve significant short-term deterioration in water resources at the quarry site, because of the ongoing land conversion. Moderate improvement would then take place as land conditions stabilized.

The alternatives to the proposed use of clarification basins are the use of vegetation buffers or of quarry pits to reduce the solids loading in the runoff. (These alternative actions could be used alone or could be used as mitigating measures in addition to the clarification basins.)

Vegetation buffers on the upland and downstream drainage paths could be used to reduce runoff velocities, stabilize soils, and trap sediment.

The vegetation buffers probably would not be as efficient as the clarification basins in controlling the solids levels in the runoff.

The large quarry excavations would be suitable for storing large volumes of runoff. However, this alternative could not be implemented until 5 or 7 years of quarrying has created a sufficient size pit (assuming no reclamation activity). The use of quarry depressions for expanding the water storage capacities of the clarification basins is being studied by the design consultant.

The proposed use of clarification basins is considered an acceptable ecological action that will meet effluent requirements.

## ARCHAEOLOGY

### BASELINE CONDITIONS

The archaeological-historical inventory of the Ideal Basic Industries quarry site included a comprehensive review of historic literature and previous archaeological surveys in the area. Although none of the previous surveys or excavations conducted included the Ideal quarry site, they provided data for predicting the types of sites which might occur in the area, as well as the chronological framework for the region.

A walk-over surface survey of the site was conducted by the University of South Alabama. Stream banks, plowed fields, erosional ditches, recently logged areas, logging roads, and wooded areas were examined for archaeological/historical sites. A total of 15 sites, 8 archaeological and 7 historic, were recorded during the survey. Of the 15, two were determined to merit further investigation--Ideal Site Nos. 6 and 8.

Research and on-site investigations indicated that these sites are of special archaeological-historical interest. In accordance with the Ideal Quarry Plan, Site No. 8 will not be disturbed by the quarrying activities. Site No. 6, however, will probably be disturbed as it is located in the area expected to be quarried within the first 15 years.

The University of South Alabama Archaeological Lab was contracted to perform the test excavations and/or salvage operations necessary in order to receive approval for quarrying activities from the Alabama Historical Commission. The name of Site No. 6 was changed to Site No. 1Mn57 to conform to the standard system of numbering archaeological sites in Alabama.

Test excavations revealed that Site 1Mn57 is a multi-component site involving an historic house site, a Mississippian component, a Woodland component, and an archaic component.

The historic component, which was very evident over a large portion of the site, yielded numerous artifacts (many related to farming activities) of late 19th to early 20th century origin.

The Mississippian (late prehistoric) component was most obvious in Feature No. 2. It is less obvious in the area of cultivation with a few small shell-tempered sherds mixed with sand- and clay-tempered sherds and many historic artifacts. Evidently, much of the Mississippian component has been destroyed by cultivation and erosion.

The Woodland component is demonstrated by the number of large-stemmed projectile points, blade tools, sand and sand/clay tempered pottery. Portions of this component have also been disturbed by cultivation; however, the majority remains intact.

An archaic (pre-ceramic) component is indicated by the presence of steatite fragments, including a large steatite vessel sherd.

The archaeologist's final report was submitted to the Alabama Historical Commission in March, 1978, with a complete account of the required test excavations. Site 1Mn57 did not reveal significant archaeological evidence to mandate further investigation, and approval of the Alabama Historical Commission is pending.

# ECOLOGY

## BASELINE CONDITIONS

### TERRESTRIAL ECOLOGY

Five major vegetational communities currently exist on the proposed quarry site: improved pasture and cropland, remnant forest, floodplain, pine-oak forest, and hardwood bottomland (see Figure 28). The first vegetational category includes bahia-grass grazing land and fields planted to row crops and silage, bordered by weedy plant species that may be important to wildlife. Remnant forests are defined as disturbed woodland areas surrounded by improved pasture and used by livestock. These areas are characterized by elevated nutrient loadings, high insolation, compacted soils, and reduced understory due to grazing.

The Alabama River floodplain, defined by the presence of alluvial soils, is a relatively small portion of the quarry site extending along the river bank and into the creek valleys. The floodplain vegetation is dominated by silver maple, gum, hickories, and ash, and also includes reed, red maple, titi, and cliftonia. There are cypress along portions of Hollinger Creek and Randons Creek. Because of a lack of intermediate age classes for these trees, the Hollinger Creek cypress area is considered a modified wetland.

Most of the proposed quarry site is essentially upland pine-oak forests with bottomlands containing hardwood forests. The bottomland hardwood species are typical of "branch-bottoms," which are defined by Gemborys (1971) as "alluvial and colluvial areas along small intermittent or perennial streams." The upland (mesic to xeric) pine-hardwood forest typically has a loblolly pine overstory which, as described by Quarterman and Keever (1962), suppresses the development of a hardwood forest. Many areas have been opened in the canopy as the result of past and present agricultural and forestry practices. These activities have yielded various stages of succession from old field to predominantly

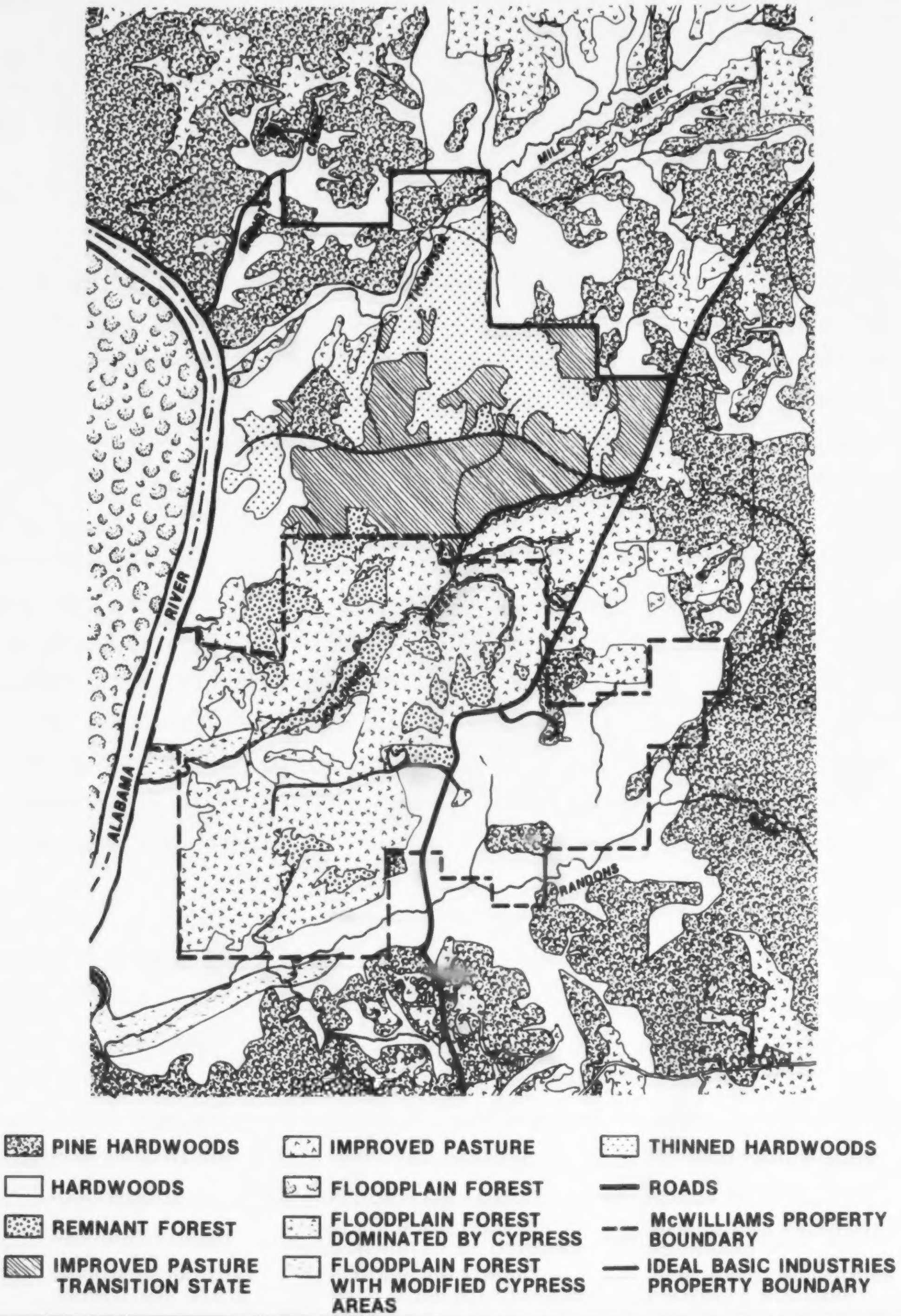
MILL CREEK
ALABAMA RIVER
RANDONS
▨ PINE HARDWOODS
☐ HARDWOODS
▨ REMNANT FOREST
▨ IMPROVED PASTURE TRANSITION STATE
☐ IMPROVED PASTURE
☐ FLOODPLAIN FOREST
☐ FLOODPLAIN FOREST DOMINATED BY CYPRESS
☐ FLOODPLAIN FOREST WITH MODIFIED CYPRESS AREAS
☐ THINNED HARDWOODS
— ROADS
-- McWILLIAMS PROPERTY BOUNDARY
— IDEAL BASIC INDUSTRIES PROPERTY BOUNDARY

Figure 28
VEGETATION MAP OF THE PROPOSED QUARRY SITE

0 0.5 1
SCALE IN KILOMETERS
N

SOURCE: Environmental Science and Engineering, Inc., 1977.

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hardwood areas. The upland forests are composed of cedar, water oak, and pine with assorted hardwoods. Water oak has the highest importance value among the upland stands and is the dominant tree, although it does not have the highest density.

The understory species on the southeast corner of the property are more sensitive to changes in soil moisture than the overstory species. Areas of different species composition can be situated close to one another. The mesic areas generally contain oak saplings, basswood, hackberry, dogwood, sweetgum, and hickories, whereas more hydric areas contain French mulberry, cane, and maples.

Ground cover species include pepper vine, Virginia creeper, poison ivy, greenbrier, Japanese honeysuckle, oak seedlings, mushrooms, and mosses, with various grasses also important in open areas. Lianas, such as grapes and crossvine, were prevalent in the understory of the higher hardwood areas. The lower stream-side areas generally lacked any lianas except in the higher strata of the vegetation. Along the river bluffs there are microclimates characterized by relatively cool air, high humidity, and low illumination. These areas support luxuriant growths of ferns.

Many of the animals inhabiting forested areas of the proposed quarry site are the same as those found in the forested areas of the plant site; however, there are some exceptions in terms of abundance and diversity. The forests of the quarry site support a greater abundance of squirrels and are characterized by the presence of deer and wild turkey. The hardwood bottomlands and floodplain forest of the quarry site contain barred owls, hooded warblers, southeastern shrews, cottonmouths, southern dusky salamanders and pickerel frogs, none of which are present at the plant site. Extensive and active beaver dams have been found in the lower reaches of Hollinger Creek. The characteristic exclusives of the forested area are warblers, chickadees, woodpeckers, squirrels, tree frogs, and skinks. The ubiquitous types are similar to those found at the plant site, e.g., raccoons, shrews, rabbits, and box turtles.

The pasture and cultivated fields of the quarry site are characterized by cattle, songbirds, cattle egrets, cotton rats, and mice. Deer, quail, mourning dove, and turkey also frequent these open areas. The number of exclusive species (e.g., the meadowlark) are few. A large number of ubiquitous types (e.g., crows, foxes) are commonly found in both forested and unforested areas. At the interface of the forest and pasture, an edge community provides cover, food, and nesting for a large variety of species. Some wildlife species utilize edges to such an extent that they are not often found in more uniform habitats (Johnston, 1947; Johnston and Odum, 1956). Quail and dove are quite common in the forest edges and remnant forest edges. Seasonal patterns at the proposed quarry site include spring and fall increases of migratory species of birds and spring and summer increases in all resident populations.

The relationship between ecosystems at the quarry site is illustrated in Figure 29. The present forest vegetation of the quarry site reflects the history of land use. In the past, the area has been cultivated, grazed, lumbered, and some portions have been burned and surrounding areas have been previously cultivated for food crops. During the last 16 years, the property has been managed under an agreement with the U.S. Department of Agriculture. From 1968 to 1974, about 40 percent of the Ideal and McWilliams properties were managed by cutting 1,300 pine trees per year and thinning uplands to favor pine, while bottomlands were managed to favor yellow poplar, ash, gum, and various hardwoods. Approximately 36 hectares (90 acres) were planted in wildlife food plants (chufu and partridge pea) during this six-year period.

The hardwoods are well-developed because of the opening of the canopy by the lumbering of pines and the selection of hardwoods in the bottomlands. Many areas within the forest are open and typically have young pine seedlings, greenbrier, blackberry, saplings of various hardwoods, and some weedy species. The understory varies depending on soil

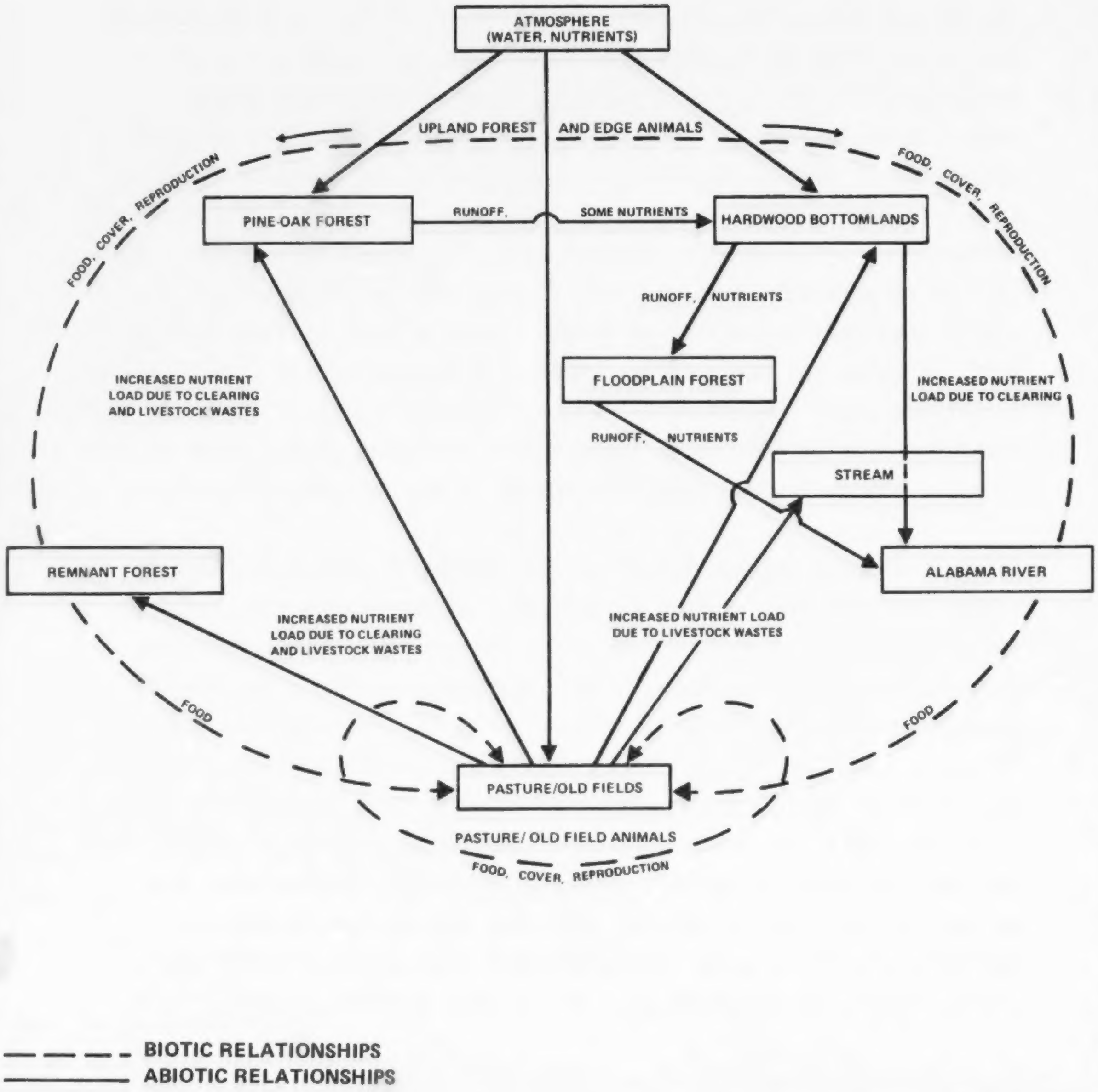
ATMOSPHERE (WATER, NUTRIENTS)
UPLAND FOREST AND EDGE ANIMALS
FOOD, COVER, REPRODUCTION
FOOD, COVER, REPRODUCTION
PINE-OAK FOREST
RUNOFF, SOME NUTRIENTS
HARDWOOD BOTTOMLANDS
RUNOFF, NUTRIENTS
FLOODPLAIN FOREST
INCREASED NUTRIENT LOAD DUE TO CLEARING AND LIVESTOCK WASTES
INCREASED NUTRIENT LOAD DUE TO CLEARING
RUNOFF, NUTRIENTS
STREAM
REMNANT FOREST
ALABAMA RIVER
INCREASED NUTRIENT LOAD DUE TO CLEARING AND LIVESTOCK WASTES
INCREASED NUTRIENT LOAD DUE TO LIVESTOCK WASTES
FOOD
FOOD
PASTURE/OLD FIELDS
PASTURE/ OLD FIELD ANIMALS
FOOD, COVER, REPRODUCTION
BIOTIC RELATIONSHIPS
ABIOTIC RELATIONSHIPS

Figure 29
ECOLOGICAL RELATIONSHIP OF THE ECOSYSTEMS OF THE PROPOSED QUARRY SITE

SOURCE: Environmental Science and Engineering, Inc., 1977.

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moisture and the degree of light penetration. Lianas are prevalent in the understory of the upland areas, especially Vitis spp. on the moderately elevated regions. The most common understory species are oaks and maples, and they would form the future climax forest if the area were not disturbed. The managed bottomlands would reach the climax state relatively soon (80 years) while the uplands would take longer (160 to 170 years). The uplands have many clearings which might require a somewhat longer period to reach climax.

Animal succession proceeds with the same general pattern as plant succession, involving increases in the diversity and specialization of organisms over time. A decline in overall animal diversity at the site is expected, however, with the implementation of the latest management plan. There will be a reduction of forest, edge, and shrub communities and an increase in pastures and old fields, leading to an increase in grassland species such as mice, meadowlarks, and grasshopper sparrows.

The overall homeostasis of the proposed quarry site is low and is similar to the conditions of very early succession. The conversion of forest systems to pasture is creating early successional attributes such as poor nutrient conservation (erosion, sedimentation, and increased need for fertilization); simplified food chains; low diversity in both plants and animals; and relatively great microclimate variation (temperature, wind, rain, etc.). In general, biotic regulation is giving way to abiotic regulation (and human regulation). This lower overall homeostasis of the site is not new. It has happened a number of times in the last two hundred years with cultivation, abandonment, and recultivation.

The present quarry site ecosystems have a number of uses. The primary commercial uses are timber and livestock production. The woodland ecosystems of the site also provide important services in terms of soil retention and erosion control. The site has a high productivity for small game species such as bobwhite quail, mourning dove, snipe, and cottontail rabbit. Wood ducks have also been observed on the site.

There is a harvestable population of deer (estimated at 115 to 200 animals), and some trappable populations of upland, bottomland, and riverine species of fur-bearing mammals can be expected. Turkey and squirrel populations are present but declining because of the loss of hardwood forests. In terms of recreational and aesthetic value, the site is not unique but has a number of important natural features, including the riverfront bluffs and the scenic lower reaches of Thompson Mill (Marshalls), Hollinger, and Randons creeks.

Sixteen species of plants and animals which are endangered, threatened, or of special concern in Alabama have ranges that include the proposed quarry site. The only plant on this list is a pogonia (Isotria spectabilis) which has been observed growing on the hardwood slopes of the site.

Three "endangered" species are the golden eagle, bald eagle, and Red Hills salamander. Eagle populations have declined in recent years because of pesticide poisoning, illegal shooting, and other human disturbance. The bald eagle is considered likely to occur along the Alabama River at the quarry site, although no nests have been found. A recent killing of a bald eagle near the quarry site was reported. Golden eagles are sighted regularly in Alabama during the winter and may occur occasionally at the Ideal property.

The quarry site is just outside the known range of the Red Hills salamander, but likely habitat does occur in some of the wooded ravines of the site. Field reconnaissance has revealed no Red Hills salamanders nor their characteristic burrows, so that the likelihood of occurrence is considered marginal.

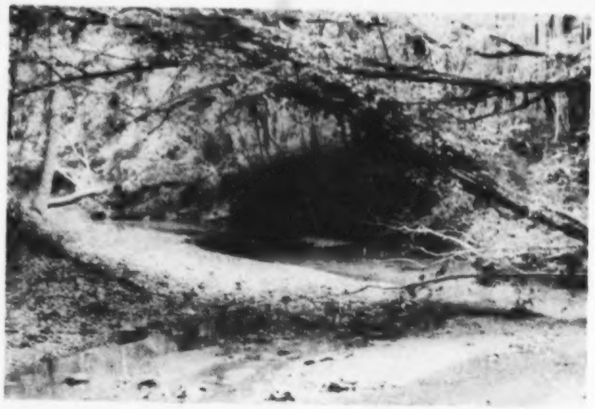
Two "threatened" species are the American alligator and the gopher tortoise. In sections of the Alabama River adjacent to the proposed quarry site, the occurrence of the American alligator is very limited (Boone, 1977). A few alligators are sighted each year near the confluence of Randons Creek and Lovetts Creek. The gopher tortoise occurs commonly on the lower Coastal Plain but is threatened by loss of suitable habitat. This burrowing animal apparently was present at the quarry site in the past, but recent disturbances of the land have lowered its likelihood of occurrence.

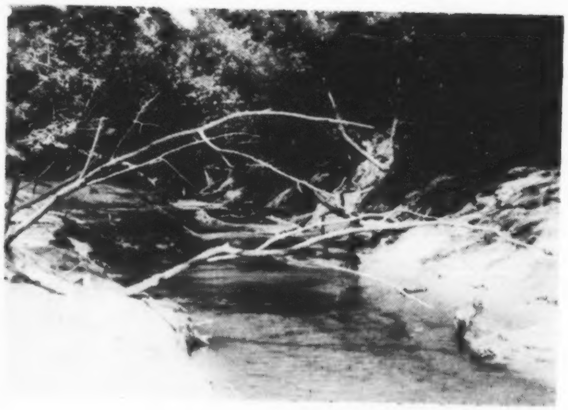
Three species of "special concern" that have been positively identified at the quarry site are the wood stork, red-shouldered hawk, and little blue heron. The wood stork is the only American representative of the stork family (Ciconiidae). Although locally common in swamps, marshes, and ponds, the wood stork population appears to be declining throughout Alabama (Imhof, 1976; Keeler, 1976). The wood stork is frequently reported in Monroe County and has been observed in the hardwood bottomlands of the quarry site. The red-shouldered hawk, which is a permanent breeding resident throughout Alabama, favors large tracts of forested land, especially bottomland hardwoods. One red-shouldered hawk was observed at the quarry site. The little blue heron nests in colonies and feeds primarily upon aquatic animals. This heron was observed in pool areas of the quarry site and is also likely to occur in the floodplain forest and hardwood bottomlands.

## AQUATIC ECOLOGY

### Introduction

Aquatic habitats at the proposed quarry site consist of the Alabama River, which forms the western boundary of the property, and four permanent streams, which empty into the Alabama River. Water quality and the streambeds have been described in the Water Resources section, and the vegetation in Terrestrial Ecology. To summarize this information, McGirts Creek, Thompson Mill (Marshalls) Creek (Figure 30), and Hollinger Creek (Figure 31) have good-quality hard water. Flow gradient is rather steep (approximately 0.9 percent), and streambeds consist of sands or coarser materials. Randons Creek (Figure 32) is the largest and has a gradient of only 0.45 percent, with some silt near the mouth. Water is soft and generally of good quality, but it shows some effects of runoff from agricultural and urban development at Frisco City. It is





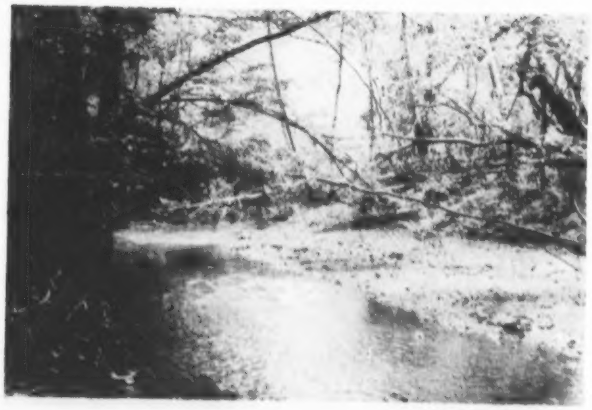


Figure 30
PHOTOGRAPHS OF THOMPSON MILL CREEK

SOURCE: Environmental Science and Engineering, Inc., 1977.

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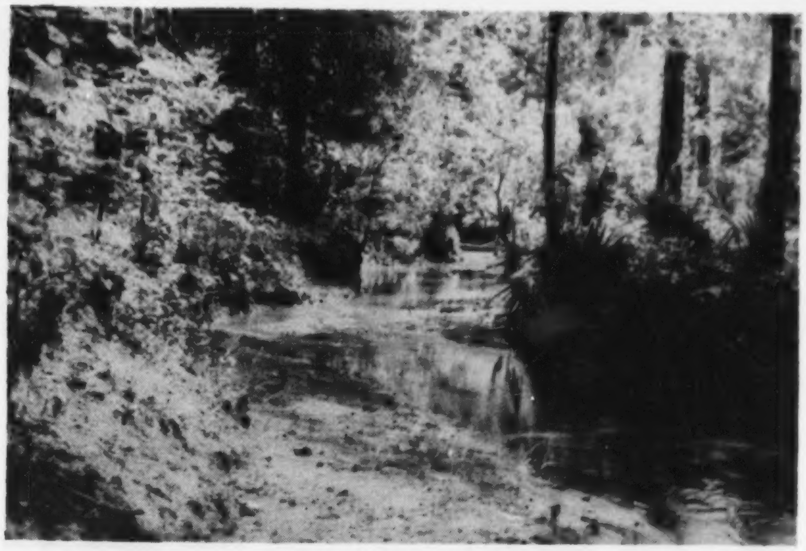
**MONROE COUNTY, ALABAMA**



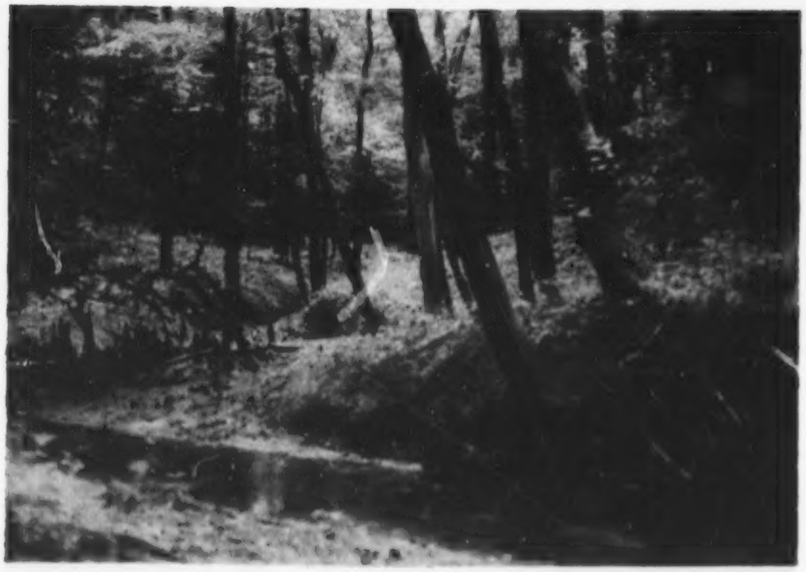


**Figure 31**
**PHOTOGRAPHS OF HOLLINGER CREEK**

**SOURCE: Environmental Science and Engineering, Inc., 1977.**

REGION IV
U.S. ENVIRONMENTAL PROTECTION
AGENCY ENVIRONMENTAL IMPACT
STATEMENT FOR IDEAL BASIC INDUSTRIES

**PROPOSED GAILLARD QUARRY**
**MONROE COUNTY, ALABAMA**

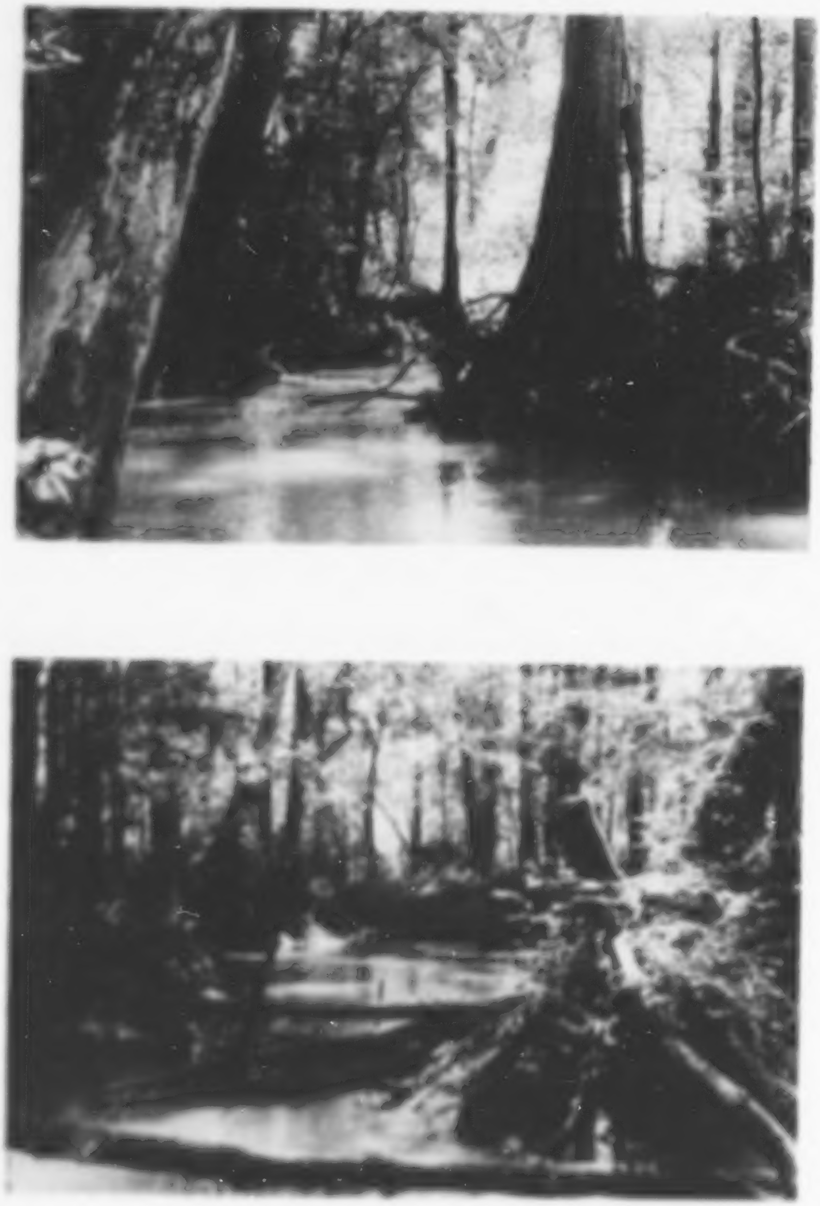


Figure 32
PHOTOGRAPHS OF RANDONS CREEK

SOURCE: Environmental Science and Engineering, Inc., 1977.

REGION IV
U.S. ENVIRONMENTAL PROTECTION
AGENCY ENVIRONMENTAL IMPACT
STATEMENT FOR IDEAL BASIC INDUSTRIES

PROPOSED GAILLARD QUARRY
MONROE COUNTY, ALABAMA

expected that the present rapid conversion of most of the site to improved pasture will lead to some deterioration of water quality, especially in the two smaller creeks.

The property is on the convex side of a bend in the Alabama River. High bluffs overlook the river, and there is very little floodplain either on the river or the tributary creeks. There is no permanent standing water on the site.

### Aquatic Fauna

#### Fishes

Fishes of the lower Alabama River system are quite similar to those of the Tombigbee/Mobile/Tensaw Rivers systems with the exception of those marine or estuarine forms which inhabit the lower reaches. Like the Tombigbee River, the Alabama is populated by larger, current-loving species in the main channel, numerous small fishes along the banks and in sheltered locations, and a great number of small stream or brook forms in the tributary streams. Normally many forms which inhabit tributaries such as those found on the quarry site are similar to headwater or upper Alabama River forms. The mouths of all of the streams on site could have any of the listed species (see Table B.A.E.3 in Appendix B, Baseline), depending upon the season and the existing water conditions.

Tributary streams to the Alabama at the level of the quarry site were examined during a low-water period following extensive spring flooding and general high water conditions. Hollinger and Thompson Mill (Marshalls) creeks had insufficient water to maintain large riverine species, and the young of larger river fishes, such as carp, carpsuckers, catfish, buffalo, sturgeon, or drum, were not observed.

Data for these tributaries are quite limited for this stretch of the Alabama River. Holley Creek and several by-pass loops, as well as the mainstream Alabama (south of the quarry site), were examined as part of a special study of the Tennessee-Tombigbee Waterway (Shipp and Hemphill, 1974). The results of this rather exhaustive sampling effort help to clarify the relative abundance of fishes which might commonly be expected from the Alabama River below Claiborne Lock and Dam (see Table B.A.E.3 in Appendix B, Baseline).

Numerical abundance for the 20 most prevalent species was examined for both the unaffected portion of the river and the by-passed loops. Minnows and shad dominate the top ten species, whereas catfishes and centrarchids were the most significant contributors to the next ten species.

In Holley Creek there is an array of species typical of moderate-sized, mid-south and southern streams. All trophic levels are represented, and every available creek habitat is used by such an assemblage of fishes. With few exceptions, any of these fishes may use the stream throughout their entire life history.

All of these fishes might be expected to be found in the lower reaches of Randons Creek, and at high water conditions in Hollinger and Thompson Mill (Marshalls) creeks. Fishes actually observed or seined from these last two creeks consisted of minnows, sunfish, bass, and darters. Under observed streamflow conditions in June, there was not sufficient water to support larger fishes.

The only species encountered which is not present in these lists was the Alabama hogsucker, *Hypentilinum etowenum*. Other than numerous minnows, the centrarchids, both bass and *Lepomis* sp., were the most prevalent. Sunfish nests were observed in every suitable soft-bottomed habitat. Although much of the habitat looked as if it would be suitable for darters, these fishes were never very abundant in the collections taken.

### Rare and Endangered Fishes

Several species of fishes have been listed by the Alabama Committee for the Identification of Rare and Endangered Species. Although previously listed, the Alabama shad, _Alosa alabamae_, and the blue-spotted sunfish, _Enneacanthus gloriosus_, are no longer regarded as being in these critical categories. No special status fishes have been observed at the site. Species which could occur include: atlantic sturgeon _Acipenser oxyrhynchus_ (Rare); shovelnose sturgeon _Scaphirhynchus platorynchus_ (Endangered); blue sucker _Cycleptu elongatus_ (Status Undetermined); crystal darter _Ammocrypta asprella_ (Threatened); and the freckled darter _Percina lenticula_ (Threatened).

Benthic Macroinvertebrates

Data concerning the aquatic invertebrate populations of the waters in the vicinity of the quarry site are quite limited. Dredging along the quarry site side of the Alabama River, as well as transects across the river, failed to produce identifiable benthic macroinvertebrates. Even though there were isolated pockets of fine materials, species of the burrowing mayflies (such as _Hexagenia_ sp.) were not detected.

Benthic macroinvertebrates which might be expected from this level of the Alabama River may be inferred from a previous study and compilation of existing data from various sources for the Tombigbee and Mobile rivers (see Table B.A.E.4 in Appendix B, Bseline). The apparently greater numbers and variety of forms is a reflection of the finer substrates and pockets of fines and mixed orgnic matter encountered in those streams as compared to the Alabama Rver at the quarry site vicinity.

The animals tentatively identified in the ield are common to woodland gravel, sand, riffle/pool streams found thoughout the midwest and southeastern United States. Some expectedforms were not found; however, it is possible that some forms were issed because not all sites were sampled. It was expected that many mre chironomids and annelids and a different assortment of mayflies woul be found. Experiences at the same level on the Tombigbee River suggsted that Sphareriid and

Corbiculid clams would be found, but these were conspicuously absent from the samples. Gastropods were locally abundant, however.

Several species of pearly naiads from the Alabama River system are listed as rare or endangered. However, no beds or mussel shoals were found in the immediate vicinity of the quarry site.

If the quarry were not developed, the land would continue to be converted to pasture with only small areas of forest remaining in 1992. This conversion could lead to a change in streamflow characteristics because water tends to run off more quickly from pasture than from well-developed forest. Water quality and aquatic ecosystems would be affected by high sediment loadings in the short run due to ongoing land clearance activity. Without the proposed quarry project, sediment loadings might decline after 1980 as the pastureland reaches stable condition. However, nutrient loadings might continue to increase due to higher stock-loading rates. Cattle would have access to the streams and would disturb the stream bottoms and would create organic and nutrient loadings.

For about 1 kilometer (0.6 mile) from the Alabama River, forest would be left along the streams, but in the gently rolling terrain farther upstream all trees probably would be cleared. The resulting exposure would lead to greater temperature fluctuations; perhaps of most concern, water would be warmer in the summer.

As a result of all these perturbations, there would be major changes in faunal composition in the upper parts of the stream. How well the fauna could be maintained in the lower portions, where forest cover is preserved, cannot be estimated precisely, but some alteration would be probable.

## RELEVANT PROJECT CHARACTERISTICS

The effects of the proposed quarry project on terrestrial and aquatic ecosystems have been described in the discussion of water resources.

The initial phase will involve clearance of a 40-hectare (100-acre) area, including the access roadway. The construction project will include preparing an area in the Milkhouse Branch drainage basin for overburden storage; developing the access road, haul road, and conveyor alignments; and constructing the docking and loading facilities on the Alabama River.

Quarrying will proceed in the areas around clarification basins 1 and 2 and will then extend to the east, south, and north of the starting point. Land reclamation of each area will begin as soon as there is enough overburden and land to make reclamation practical. Erosion controls will be utilized for all aspects of the project that involve land disturbance.

Quarrying and reclamation will proceed at an average rate of about 14 hectares (35 acres) per year. As much as 80 percent of the 1,633-hectare (4,035-acre) site could be quarried over the 50-year life of the project. However, the total area of land which is disturbed at any one time, excluding stable reclaimed land, should not exceed 120 hectares (300 acres).

## IMPACTS

Land disturbance at the quarry site will alter significantly the present ecological functions and attributes of the site. The initial disturbance of existing vegetation in the first 15 years represents a loss of 120 hectares (296 acres) of cultivated croplands or pasturelands, 139 hectares (343 acres) of hardwoods, and 30 hectares (74 acres) of remnant forests.

Any forests which are left on the site during the quarrying activities may be affected by the quarry. Some of the lower floodplain forest may remain; however, the increased surface runoff, insolation, and airflow will cause changes in composition and production of these remnant areas.

Insolation of the remnant forests will increase and will cause increased temperatures within the forests. The opened areas will develop more weedy species and primary woody invaders. Most of the forest areas remaining after excavation will be hardwood bottomlands, since the pine-oak upland areas will have been destroyed during the quarrying.

The magnitude of these impacts is considered low because of the abundance of the existing forested areas in the area. The significance is low because these actions will probably not affect subsequent land use (pasture). The impacts are considered long-term, but reversible.

In addition to the innate value of plant communities destroyed, the first 15 years of the project will involve losses of at least 56 hectares (138 acres) of most favorable rabbit and quail habitat, 93 hectares (230 acres) of most favorable turkey habitat, and 21 hectares (51 acres) of most favorable squirrel habitat. The animal populations inhabiting these areas will be displaced.

In general, the impact of the quarrying activities will be the change in wildlife populations from forest types to old field/pasture types; however, the magnitude of these changes is low because of the relatively small amount of affected area in comparison to the areawide abundance of available forest habitat. The significance of this wildlife habitat loss is low because of the frequent occurrence of the species involved in the surrounding area. All the populations in the area are currently self-sustaining. This impact is considered long-term, but reversible.

The major impact of these activities on rare and endangered species will be reduced habitat for those animals which inhabit forest or forest/field communities. The magnitude of this disturbance of sensitive fauna inhabiting aquatic environments will be low, and the significance should be low because of the small areas to be affected and the availability of suitable habitat in nearby areas. This impact will be long-term, but reversible.

Erosion and stormwater will be controlled by berms, grading, and clarification basins; however, it is expected that some moderate net increases in the loads of particulate material carried by tributary streams will occur. The presence of this material could be detrimental to aquatic organisms and could reduce primary productivity. In addition, settling of particulate material on the substrate could smother bottom-dwelling organisms. These impacts are considered of limited significance because erosion controls will limit sediment loads and the ecological adjustment to elevated turbidity levels should have already occurred during the conversion of the site to improved pasture.

The overall effect of sedimentation, organic loadings, and land clearance will be to increase the prevalence of facultative aquatic organisms. Siltation can be expected to create more soft-bottomed habitats which would favor burrowing forms (worms, chironomids, burrowing mayflies) over root, rubble, sand, or gravel inhabitants. The removal of trees and their detrital components, such as leaves, twigs, and bark, may eliminate the larger grazers and carnivores of the present system (mayflies, elmid beetles, stoneflies, dragon and damsel flies, and members of the Megaloptera).

The net sedimentation effects of the quarrying project alone would probably not be sufficient to cause pronounced changes in ecological conditions. These impacts are considered of low magnitude based on the erosion/sedimentation controls planned and of low significance. The impacts should be long-term (life of the quarry) and mostly reversible.

As presented in the Air Quality section, limestone dust may enter the atmosphere from quarry operations. The results of Brandt and Rhodes (1972) indicate the possibility of reduced productivity of the remaining forest species at the perimeter of the quarry. The effects are considered to be of low significance and magnitude because of the commonness of the species involved and the relatively few trees to be affected. These impacts will be long-term but reversible when the quarry area is reclaimed.

Noise resulting from construction and quarrying (see Noise section) will have adverse effects on some species of wildlife, such as the turkey, which requires a fairly high degree of isolation. This disturbance could contribute to the reduction of some wildlife populations remaining on the site. It is not considered significant to the area and region because of the frequent occurrence of the species. This impact is considered of low magnitude and long-term, but highly reversible.

The increased barge traffic from the quarry could disturb activity patterns of water-associated birds, such as eagles and waterfowl, and could affect alligators in the area. In all cases, the disturbed species will relocate or adapt to the conditions. These impacts are of low magnitude and significance, long-term, and reversible.

The drainage patterns created by the quarrying and reclamation process could reduce the drainage area of Thompson (Marshalls) Mill Creek by about 10 percent. This change could reduce the base flow of the stream, the extent of flushing, the size and depth of pools, and the length of stream reaches containing water during dry-weather conditions. However, since major effects on base flow should not occur, the related impacts to aquatic communities are estimated to be of low magnitude and significance, but irreversible and long-term.

After active quarry slopes are no longer drained into the clarification basins, these basins will have the positive impact of creating additional habitat for aquatic-related species such as herons and waterfowl. This positive impact is considered to be of low significance and low magnitude for the area because of other existing ponds.

## MITIGATING MEASURES

The environmental safeguards employed to lessen impacts upon terrestrial and aquatic ecosystems will include all of the measures described earlier in connection with water resources, noise, and air quality. Among the most prominent measures will be the stormwater clarification basins, on-site erosion controls, 30-meter (100-foot) setbacks from major creeks and streams, and steps during reclamation to recreate productive soil conditions.

There are no mitigating measures available to reduce the immediate ecological impacts of land clearance, given the necessary characteristics of quarry operation. However, a number of options exist with regard to the revegetation of reclaimed land and other areas requiring stabilization. A program could be established to develop healthy biologic communities as a wildlife asset, particularly at the edge of mined areas. These "blend" zones would become ecotones between biotic communities and would be managed to produce more varied assemblages of plants and animals than would be possible for either community alone. A variety of wildlife food and cover plants are available from public sources. Other species which would naturally volunteer and produce significant browse would include woody species such as maples, persimmon, sassafras, and oak, and herbaceous natural plants such as beggar ticks, vetch, lespedeza, and sumac.

Since the reclaimed land will be utilized as pasture, the area for which beneficial wildlife plantings will be feasible is rather small, consisting of: (1) blend zones between quarried and undisturbed land; (2) potentially difficult areas such as drainageways where erosion may occur; and (3) other areas requiring stabilization such as faces of retention dams.

## ALTERNATIVES

Ecosystem conditions at the proposed quarry site would be only moderately different under the no-action alternative than under the project alternative. The no-action alternative would involve somewhat greater recovery of aquatic conditions from the effects of land conversion, and somewhat more forest cover would remain for the benefit of terrestrial organisms. The no-action alternative obviously would not involve permanent changes in topography and drainage.

Alternatives relating to ecological impact involve land reclamation. Instead of reclaiming to pasture, the project could include the creation of a commercial pine forest or an old field condition leading by natural succession to a mixed deciduous woodland. These alternatives would lead to a different mix of faunal species and possibly greater ecosystem diversity than the pasture alternative, and generally would benefit aquatic conditions.

The property could also be used as an industrial area because of its favorable location with good water access and a small flood potential.

The decision for reclamation to pastureland provides flexibility in long-range land use since timbering, agriculture, or some other land use could easily be established at a later time.

## SOCIOECONOMICS

### BASELINE

### PRESENT CONDITIONS

The socioeconomic impact area of the proposed quarry operation includes Monroe, Clarke, and Conecuh counties, with the most significant impacts limited primarily to Monroe County. Historically, the region around Monroe County has been characterized by declining populations and stagnant economic conditions. Population losses between 1940 and 1970 amounted to 29.3 percent in Monroe County, 38.6 percent in Conecuh County, and 3.3 percent in Clarke County. However, the populations of these counties have been either stable or rising since 1970. Monroe County contained 20,883 residents in 1970, 21,200 persons in 1975, and an estimated 21,700 persons in 1977.

Past population losses in the three impact area counties primarily involved out-migration of farm workers and their families, in response to the low profitability of agriculture and the increased opportunities elsewhere. The principal economic support now is manufacturing activity, which accounts for more than 40 percent of total employment in each of the three counties. Two-thirds or more of the manufacturing employment in each case is concentrated in three industrial categories: wood products, textile products, and pulp and paper products. Growth in manufacturing employment has provided the major stimulus for recent population gains in Monroe and Clarke counties. Monroe County has also benefitted by substantial employment growth in retail trade and services, involving the emergence of Monroeville as the commercial center for a sizable area.

Average income levels are relatively low for Monroe, Clarke, and Conecuh counties. Per capita income remains between 72 percent and 81 percent of the average for the State of Alabama, although there has been a recent narrowing of the gap in Monroe and Conecuh counties.

In 1970, between 30 percent and 35 percent of the families in the three counties had incomes below the poverty level.

Housing in Monroe County is currently in somewhat short supply, particularly in the Monroeville area. This circumstance is related to the general increases in employment and population, and to the construction of the Parsons and Whittemore, Inc., pulp mill facility at Claiborne. It is estimated that the housing market in Monroe County currently can absorb at least 50 percent more dwelling units per year than were constructed on the average between 1960 and 1970. Active steps are being taken by the city administration of Monroeville to alleviate the present shortage, particularly with regard to rental units and the availability of sites for mobile homes.

Community facilities in Monroe County presently are being expanded and will be generally adequate to accommodate future growth. Public school enrollment has declined in recent years (due to an expansion of enrollment at Monroe Academy), but can be expected to increase in the future. The major health care facility in the county, Monroe County Hospital, was expanded in 1974 and will increase in capacity by 50 percent over the next 10 years according to current plans.

A public sewer system serving Monroeville, Frisco City, and adjacent areas is presently under construction. Public water supply systems are currently being expanded by the Monroeville Water Board and the Excel Water Board. There has been improvement in the public recreation facilities provided by Monroeville and other communities, but the overall level of recreation opportunities in the county has been described as "lacking" in the Monroe County Preliminary Comprehensive Development Plan.

Existing highway facilities in Monroe County are more than adequate to accommodate the low volumes of traffic found in the county. There are no public transportation facilities other than intercity bus service. The Monroeville Fire Department provides fire protection service to most of the county. No special problems in providing police or fire protection to the county's expanding population have been reported.

Planning assistance to Monroe County is provided actively by the Alabama-Tombigbee River Regional Planning and Development Commission, which has recently prepared a preliminary comprehensive development plan for the county. The City of Monroeville enforces zoning regulations and building codes within its corporate limits and exercises subdivision review within the police jurisdiction [extending 2.5 kilometers (1.5 miles) beyond the corporate boundary]. There is no regulation outside police jurisdiction of municipalities.

## FUTURE CONDITIONS

The most important single development affecting Monroe County is the $266 million Parsons and Whittemore pulp mill project. Permanent operation at this pulp mill will generate more than $5,000,000 in income for 350 employees. More than $2,000,000 annually will be spent for wood purchases in Monroe County alone, creating roughly 125 new forest-related jobs. Several other industrial development projects in Monroe County have either been announced or are under construction. A new Scotch Plywood plant in Beatrice will employ 125 to 130 persons, with a payroll of approximately 1.6 million dollars. Another wood products plant is to be constructed by Georgia Pacific at Peterman. These and other expansion plans could add close to 1,000 industrial and related jobs in Monroe County over the next 5 years.

Employment projections for Monroe County in 1977, 1985, and 1992 are presented in Table 7. The 1985 forecasts assume only that the developments just mentioned will take place and that there will be a multiplier effect on non-manufacturing activity. The forecasts for 1992 assume a slowdown in industrial growth but continued expansion in the services-producing sector. Table 8 presents two population forecasts for Monroe County: the OBERS Series E Projection and an alternative forecast series which is consistent with the employment

Table 7. Forecasts of Nonagricultural Wage and Salary Employment in Monroe County

| | April 1977 | Change 1977-1985 | 1985 | Change 1985-1992 | 1992 |
|---|---|---|---|---|---|
| Manufacturing | 3,250 | 850 | 4,100 | 300 | 4,400 |
| Nonmanufacturing | 2,990 | 850 | 3,840 | 750 | 4,590 |
| TOTAL | 6,240 | 1,700 | 7,940 | 1,050 | 8,990 |

Source: Environmental Science and Engineering, Inc, 1977, utilizing information from the Alabama Department of Industrial Relations, Research and Statistics Division, 1977.

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Table 8. Comparison of Population Forecast for Monroe County with OBERS Series E Projections

| Monroe County Population | Alternative Forecast | OBERS | Deviation from OBERS Number | Deviation from OBERS Percent |
|---|---|---|---|---|
| 1970 | 20,900 | 20,900 | 0 | 0 |
| 1977 | 21,700 | 21,600* | 100 | 0.5 |
| 1980 | 22,400* | 21,900 | 500 | 2.3 |
| 1985 | 23,600 | 22,300 | 1,300 | 5.8 |
| 1990 | 24,600* | 22,600 | 2,000 | 8.8 |
| 1992 | 25,000 | 22,500* | 2,500 | 11.1 |
| Increase, 1977-1992 | 15.2% | 4.2% | | |

* Denotes interpolated values.

Sources: U.S. Department of Agriculture, Economic Research Service, 1975.

Environmental Science and Engineering, Inc., 1977.

estimates just described. The alternative forecast, which exceeds OBERS by 11.1 percent in 1992, is believed to be more accurate as an extrapolation of very recent trends in the county. The projected average population growth rate of roughly 1 percent per year is not considered sufficient to produce serious stress upon housing, community facilities, or social stability.

## RELEVANT PROJECT CHARACTERISTICS

The construction phase of the proposed Ideal Basic Industries quarry project will involve an average of 133 employees for 18 months and a peak labor force of 250 workers. The total wages paid will exceed $3,000,000. Permanent operations at the quarry will employ 19 persons and will generate an annual payroll of approximately $400,000 in 1977 dollars. The project will involve temporary changes in land use from improved pasture to mineral extraction and back to pasture in each successive area of the site that is quarried. There will be major increases in waterway traffic on the Alabama River, as discussed in the Water Resources section, and very slight increases in traffic on highways near the quarry site.

## IMPACTS

The multiplier effects of construction employment at the quarry site will generate approximately 60 additional jobs in Monroe County, and $1,000,000 or more in additional income. The total employment effect will thus average nearly 200 workers during the 18-month duration of the project. This economic stimulus to Monroe County and surrounding areas is rated moderate in significance and magnitude as an impact.

The labor force buildup at the quarry may coincide with the phasing out of the nearby Parsons and Whittemore project. This situation would allow some direct shifts of personnel and would permit the quarry construction workers to utilize housing and public facilities that currently are used by the Parsons and Whittemore labor force.

The construction labor force residing in Monroe County is somewhat limited because of the small scale of the local economy. Therefore, a majority of the workers on the quarry project will necessarily live elsewhere. Some of these workers will commute to Monroe County on a daily or weekly basis, and a few will establish residence in the area for the duration of the project or longer. The current shortage of transient accommodations and rental housing units in Monroe County is expected to ease by the time the quarry project is under way, so that construction workers should not have difficulty in finding suitable lodgings. Very few of the workers will bring dependents to the area. Given the generally favorable experience of the Parsons and Whittemore project, the construction phase at the proposed quarry should not have adverse impacts upon public services or social conditions.

Permanent operations at the proposed quarry will involve 19 employees and will generate 25 additional jobs in Monroe County due to a multiplier effect. This favorable economic impact is considered moderate in magnitude and high in significance to the community. Of the 44 jobs attributable directly or indirectly to the quarry operation, it is estimated that the number held by Monroe County residents will be approximately 32 in 1985 and 38 in 1992. The project will increase the Monroe County population by about 92 persons in 1985 relative to baseline conditions and by 102 persons in 1992. Population increments of this size clearly can be assimilated by the Monroe County community without overburdening public facilities or creating social disruptions.

The isolation of the Ideal Basic Industries quarry site relative to other developed land uses will limit greatly the possibility of off-site impacts upon land use, land value, or residential amenity. The project is not expected to have significant impacts involving noise or air quality.

## MITIGATING MEASURES

The proposed quarry project will not yield adverse socioeconomic impacts which would require mitigation.

## ALTERNATIVES

Alternate quarry locations are discussed in the Site Selection section. There are no other project alternatives which would have a significant influence upon socioeconomic impacts.

# PERMIT AND APPROVAL SECTION

# DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT (PLANT SITE)

Permit No. AL0028801
Application No.

## AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

Ideal Basic Industries
Cement Division
Theodore Cement Plant

DRAFT

is authorized to discharge from a facility located at

Theodore Industrial Park
Theodore, Alabama

to receiving waters named

Theodore Ship Channel - Discharge 001
North Fork of the Deer River - Discharge 002

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on

This permit and the authorization to discharge shall expire at midnight,

Signed this day of

Paul J. Traina, Director
Enforcement Division

EPA Form 3320-4 (10-73)

DRAFT

## A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on effective date and lasting through the term of this permit, the permittee is authorized to discharge from outfall(s) serial number(s) 001-material stockpiles run-off, cooling tower blowdown, vehicle and floor wash wastewaters and fuel storage area dike drainage. Such discharges shall be limited and monitored by the permittee as specified below:

| Effluent Characteristic | Discharge Limitations | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|
| | kg/day (lbs/day) | | Other Units (Specify) | | | |
| | Daily Avg | Daily Max | Daily Avg | Daily Max | Measurement Frequency | Sample Type |
| Flow—m$^3$/Day (MGD) | — | — | — | — | Daily | Recorder |
| Total Suspended Solids shall not exceed 50 mg/1 for any one (1) day | | | | | 1/week | Composite |

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): nearest accessible point after final treatment but prior to actual discharge to or mixing with the receiving waters.

DRAFT

2. During the period beginning on effective date and lasting through the term of this permit, the permittee is authorized to discharge from outfall(s) serial number(s) 001a, fuel storage dike area only.

Such discharges shall be limited and monitored by the permittee as specified below:

| Effluent Characteristic | Discharge Limitations | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|
| | kg/day (lbs/day) | | Other Units (Specify) | | | |
| | Daily Avg | Daily Max | Daily Avg | Daily Max | Measurement Frequency | Sample Type |
| Flow—$m^3$/Day (MGD) | — | — | — | — | 1/month | Estimate |
| Oil and Grease | -- | -- | 30 mg/l | 60 mg/l | 1/month | Grab |

Where dike drains discharge into an oil-water separator, effluent limitations and monitoring requirements apply to the effluent from the oil-water separator. However, the discharge from dike drains shall not be subject to the monitoring and effluent requirements of the permit if all of the following are true:

1. The dike drain discharge does not go to an oil-water separator and
2. The facility has a valid SPCC Plan pursuant to 40 CFR 112 and
3. Best management practices (BMP) are used in draining the diked area. BMP is defined as use of a portable oil skimmer or similiar device or the use of abosorbent material to remove oil and grease (as indicated by the presence of a sheen) immediately prior to drainage.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): nearest accessible point after final treatment but prior to actual discharge to or mixing with all other waste waters.

DRAFT

3. During the period beginning on effective date and lasting through the term of this permit, the permittee is authorized to discharge from outfall(s) serial number(s) 002, uncontaminated storm water run-off.

Such discharges shall be limited and monitored by the permittee as specified below:

| Effluent Characteristic | Discharge Limitations | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|
| | kg/day (lbs/day) | | Other Units (Specify) | | | |
| | Daily Avg | Daily Max | Daily Avg | Daily Max | Measurement Frequency | Sample Type |
| Flow—$m^3$/Day (MGD) | — | — | — | — | 1/month | Estimate |

Best Management Practices (BMP)

## B. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

| | |
|---|---|
| Operational Level Attained................ | Effective Date of permit |

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

## C. MONITORING AND REPORTING

### 1. *Representative Sampling*

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

### 2. *Reporting*

Monitoring results obtained during the previous 3 months shall be summarized for each month and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period. The first report is due on . Duplicate signed copies of these, and all other reports required herein, shall be submitted to the Regional Administrator and the State at the following addresses:

Environmental Protection Agency
Water Enforcement Branch
345 Courtland Street, N.E.
Atlanta, Georgia 30308

Alabama Water Improvement Commission
State Office Building
Montgomery, Alabama 36130

### 3. *Definitions*

a. The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

b. The "daily maximum" discharge means the total discharge by weight during any calendar day.

### 4. *Test Procedures*

Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304(g) of the Act, under which such procedures may be required.

### 5. *Recording of Results*

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date, and time of sampling;

b. The dates the analyses were performed;

c. The person(s) who performed the analyses;

d. The analytical techniques or methods used; and

e. The results of all required analyses.

6. *Additional Monitoring by Permittee*

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form (EPA No. 3320-1). Such increased frequency shall also be indicated.

7. *Records Retention*

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the State water pollution control agency.

## A. MANAGEMENT REQUIREMENTS

### 1. *Change in Discharge*

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

### 2. *Noncompliance Notification*

If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Regional Administrator and the State with the following information, in writing, within five (5) days of becoming aware of such condition:

a. A description of the discharge and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

### 3. *Facilities Operation*

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

### 4. *Adverse Impact*

The permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

### 5. *Bypassing*

Any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where unavoidable to prevent loss of life or severe property damage, or (ii) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Regional Administrator and the State in writing of each such diversion or bypass.

6. *Removed Substances*

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

7. *Power Failures*

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

a. In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;

or, if such alternative power source is not in existence, and no date for its implementation appears in Part I,

b. Halt, reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

## B. RESPONSIBILITIES

1. *Right of Entry*

The permittee shall allow the head of the State water pollution control agency, the Regional Administrator, and/or their authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

2. *Transfer of Ownership or Control*

In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Regional Administrator and the State water pollution control agency.

3. *Availability of Reports*

Except for data determined to be confidential under Section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act.

4. *Permit Modification*

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. *Toxic Pollutants*

Notwithstanding Part II, B-4 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. *Civil and Criminal Liability*

Except as provided in permit conditions on "Bypassing" (Part II, A-5) and "Power Failures" (Part II, A-7), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. *Oil and Hazardous Substance Liability*

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. *State Laws*

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. *Property Rights*

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. *Severability*

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

## PART III

### OTHER REQUIREMENTS

1. For the purpose of this permit, a calendar day is defined as any consecutive 24-hour period.

2. In accordance with Section 306(d) of the Federal Water Pollution Control Act (PL92-500) the standards of performance for conventional pollutants as contained in this permit shall not be made any more stringent during a ten year period beginning on the date of completion of such construction or during the period of depreciation or amortization of such facility for the purposes of section 167 or 169 (or both) of the Internal Revenue Code of 1954, whichever period ends first. The provisions of Section 306(d) do not limit the authority of the Environmental Protection Agency to modify the permit to require compliance with a toxic effluent limitation promulgated under BAT or toxic pollutant standard established under Section 307(a) of the FWPCA, or to modify, as necessary, to assure compliance with any applicable State Water Quality Standard.

3. Control of runoff from site construction shall be consistent with sound . engineering practices such as those contained in "Guidelines for Erosion and Sediment Control Planning and Implementation," EPA-R2-72-015 (August, 1972) or "Processes, Procedures and Methods to Control Pollution Resulting from all Construction Activity," EPA-430/9-73-007 (October, 1973). Prior to start of construction, the permittee shall submit to the Regional Administrator for review and approval, a detailed erosion and sediment control plan. An approved plan shall be implemented prior to start of construction.

4. Any overflow which is discharged from facilities designed, constructed and operated to treat to the applicable limitations for pH and total suspended solids, the precipitation and run-off resulting from a 10-year, 24-hour precipitation event shall not be subject to the limitations set forth in Part I, A of this permit.

# DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT (QUARRY SITE)

Permit No. AL0028819

# AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

Ideal Basic Industries
Cement Division
Gaillard Quarry

DRAFT

is authorized to discharge from a facility located at

Monroe County, Alabama

to receiving waters named

Alabama River

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on

This permit and the authorization to discharge shall expire at midnight,

Signed this day of

Paul J. Traina, Director
Enforcement Division

EPA Form 3320-4 (10-73)

## A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on effective date and lasting through the term of this permit, the permittee is authorized to discharge from all point sources associated with active mine dewatering activities indicated on the area map (Attachment I).
Such discharges shall be limited and monitored by the permittee as specified below:

| Effluent Characteristic | Discharge Limitations | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|
| | kg/day (lbs/day) | | Other Units (Specify) | | | |
| | Daily Avg | Daily Max | Daily Avg | Daily Max | Measurement Frequency | Sample Type |
| Flow—m$^3$/Day (MGD) | — | — | — | — | 1/month | Instantaneous |
| Total Suspended Solids shall not exceed 30 mg/l for any one (1) day | | | | | 1/month | Composite |

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per month by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): nearest accessible point after final treatment but prior to actual discharge to or mixing with the receiving waters.

## B. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

   Operational Level Attained....................Effective Date of Permit

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

## C. MONITORING AND REPORTING

### 1. *Representative Sampling*

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

### 2. *Reporting*

Monitoring results obtained during the previous 3 months shall be summarized for each month and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period. The first report is due on . Duplicate signed copies of these, and all other reports required herein, shall be submitted to the Regional Administrator and the State at the following addresses:

Environmental Protection Agency
Water Enforcement Branch
345 Courtland Street, N.E.
Atlanta, Georgia 30308

Alabama Water Improvement Commission
State Office Building
Montgomery, Alabama 36130

### 3. *Definitions*

a. The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

b. The "daily maximum" discharge means the total discharge by weight during any calendar day.

### 4. *Test Procedures*

Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304(g) of the Act, under which such procedures may be required.

### 5. *Recording of Results*

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date, and time of sampling;

b. The dates the analyses were performed;

c. The person(s) who performed the analyses;

d. The analytical techniques or methods used; and

e. The results of all required analyses.

6. *Additional Monitoring by Permittee*

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form (EPA No. 3320-1). Such increased frequency shall also be indicated.

7. *Records Retention*

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the State water pollution control agency.

## A. MANAGEMENT REQUIREMENTS

### 1. *Change in Discharge*

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

### 2. *Noncompliance Notification*

If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Regional Administrator and the State with the following information, in writing, within five (5) days of becoming aware of such condition:

a. A description of the discharge and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

### 3. *Facilities Operation*

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

### 4. *Adverse Impact*

The permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

### 5. *Bypassing*

Any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where unavoidable to prevent loss of life or severe property damage, or (ii) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Regional Administrator and the State in writing of each such diversion or bypass.

6. *Removed Substances*

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

7. *Power Failures*

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

a. In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;

or, if such alternative power source is not in existence, and no date for its implementation appears in Part I,

b. Halt, reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

## B. RESPONSIBILITIES

1. *Right of Entry*

The permittee shall allow the head of the State water pollution control agency, the Regional Administrator, and /or their authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

2. *Transfer of Ownership or Control*

In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Regional Administrator and the State water pollution control agency.

3. *Availability of Reports*

Except for data determined to be confidential under Section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act.

4. *Permit Modification*

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. *Toxic Pollutants*

Notwithstanding Part II, B-4 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. *Civil and Criminal Liability*

Except as provided in permit conditions on "Bypassing" (Part II, A-5) and "Power Failures" (Part II, A-7), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. *Oil and Hazardous Substance Liability*

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. *State Laws*

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. *Property Rights*

**The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.**

10. *Severability*

**The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.**

## PART III

## OTHER REQUIREMENTS

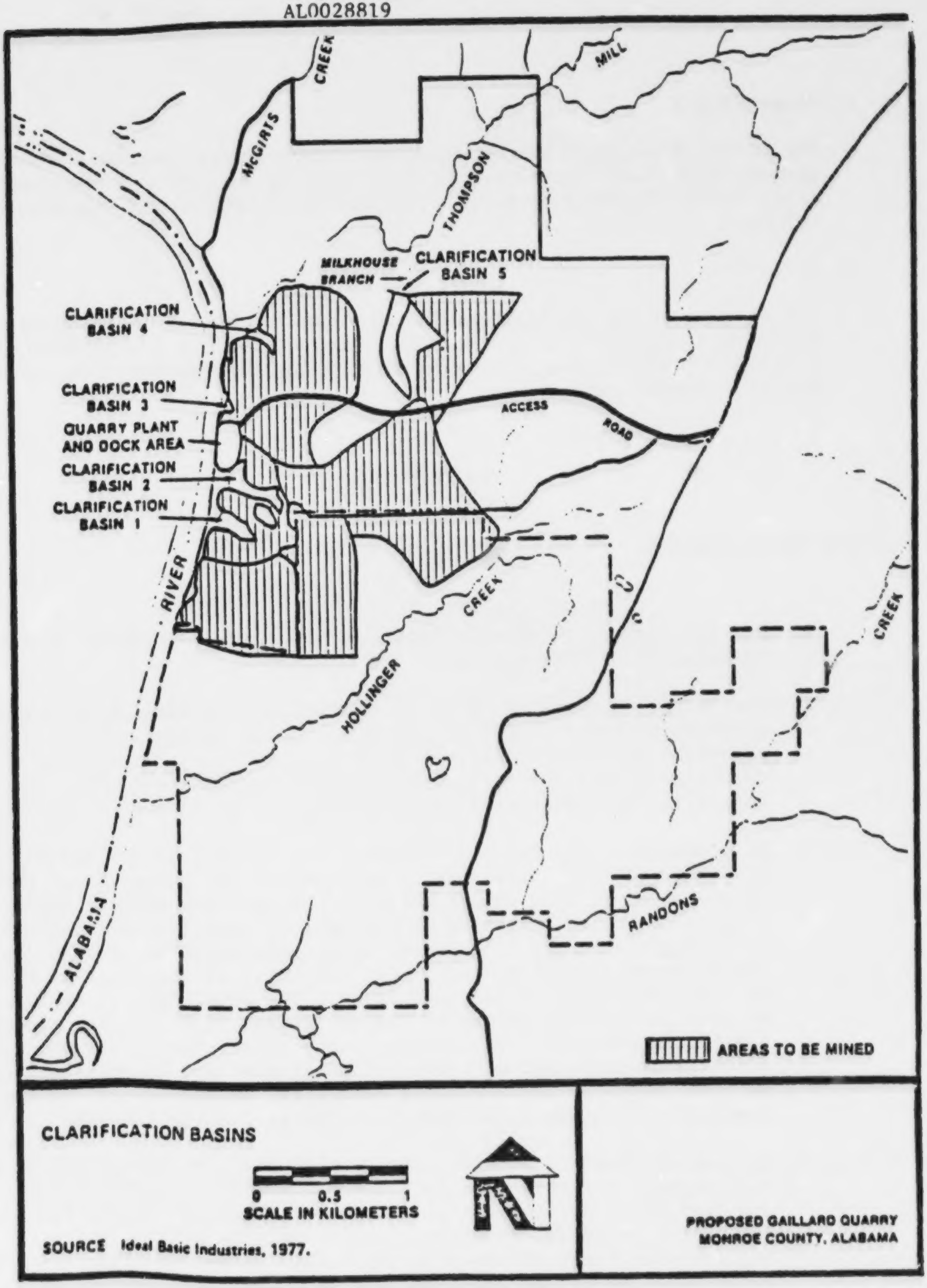
1. For the purpose of this permit, a calendar day is defined as any consecutive 24-hour period.

2. Any untreated overflow which is discharged from facilities designed, constructed and operated to contain or treat as applicable all process generated waste water and the surface runoff to the treatment facility, resulting from a 10-year, 24-hour precipitation event shall not be suject to the limitations set forth in Part I, A of this permit.

3. In accordance with Section 306(d) of the Federal Water Pollution Control Act (PL92-500) the standards of performance for conventional pollutants as contained in this permit shall not be made any more stringent during a ten year period beginning on the date of completion of such construction or during the period of depreciation or amortization of such facility for the purposes of section 167 or 169 (or both) of the Internal Revenue Code of 1954, whichever period ends first. The provisions of Section 306(d) do not limit the authority of the Environmental Protection Agency to modify the permit to require compliance with a toxic effluent limitation promulgated under BAT or toxic pollutant standard established under Section 307(a) of the FWPCA, or to modify, as neccessary, to assure compliance with any applicable State Water Quality Standard.

4. Control of runoff from site construction shall be consistent with sound engineering practices such as those contained in "Guidelines for Erosion and Sediment Control Planning and Implementation," EPA-R2-72-015 (August, 1972) or "Processes, Procedures and Methods to Control Pollution Resulting from all Construction Activity," EPA-430/9-73-007 (October, 1973). Prior to start of construction, the permittee shall submit to the Regional Administrator for review and approval, a detailed erosion and sediment control plan. An approved plan shall be implemented prior to start of construction.

ATTACHMENT I
AL0028819


CLARIFICATION BASINS

SOURCE Ideal Basic Industries, 1977.

PROPOSED GAILLARD QUARRY
MONROE COUNTY, ALABAMA

CREEK
McGIRTS
MILL
THOMPSON
MILKHOUSE BRANCH
CLARIFICATION BASIN 5
CLARIFICATION BASIN 4
CLARIFICATION BASIN 3
QUARRY PLANT AND DOCK AREA
CLARIFICATION BASIN 2
CLARIFICATION BASIN 1
ACCESS ROAD
RIVER
CREEK
HOLLINGER
CREEK
ALABAMA
RANDONS
AREAS TO BE MINED
0 0.5 1
SCALE IN KILOMETERS
N

# JOINT PUBLIC NOTICE--U.S. ARMY CORPS OF ENGINEERS AND ALABAMA WATER IMPROVEMENT COMMISSION (PLANT SITE)

**DEPARTMENT OF THE ARMY**
MOBILE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 2288
MOBILE, ALABAMA 36628

REPLY TO
ATTENTION OF:

# JOINT PUBLIC NOTICE

# U. S. ARMY CORPS OF ENGINEERS

# AND

# STATE OF ALABAMA

# WATER IMPROVEMENT COMMISSION

SAMOP-S
PUBLIC NOTICE NO. AL78-00057-E

27 April 1978

## PROPOSED DREDGING, FILL, BARGE DOCK, AND OUTLET STRUCTURE, THEODORE SHIP CHANNEL AND NORTH FORK DEER RIVER, ADJACENT TO MOBILE BAY, MOBILE COUNTY, ALABAMA

TO WHOM IT MAY CONCERN:

This District has received an application for a Department of the Army permit pursuant to Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403), and Section 404 of the Federal Water Pollution Control Act (PL 92-500, 33 U.S.C. 1344), as described below:

APPLICANT: Ideal Basic Industries
G. M. Lochhead, P. E., Chief Engineer
P. O. Box 8789
Denver, CO 80201

WATERWAY: Theodore Ship Channel, North Fork Deer River
Mobile County, Alabama

WORK: Perform dredging to a depth of -40.0 MSL, by hydraulic dredge, of an area approx. 300 ft. x 2300 ft. along the shoreline of applicant's property as shown. Approximately 650,000 CY native soil, including sands, silts and clays will be removed. It is presently anticipated that dredging operations will be conducted concurrently with the dredging of the Theodore Industrial Canal and that the removed material will be disposed of in a site approved for use in connection with the Theodore Industrial Canal.

Approximately 2300 ft. of concrete trestle type dock structures will be constructed adjacent to the dredged area. The dock facilities will extend approx. 80 ft. from the shoreline into the dredged area. The dock facilities will be operated to receive raw materials utilized in the manufacture of cement and to support equipment utilized in loading cement transport vessels.

Fill will be placed in the wetland area as shown adjacent to an existing roadway in order to construct an access road to the plant site. Approx. 4450 CY fill will be required to bring the grade of the plant access road to elevation 10.0 MSL, the top of the proposed bridge across North Fork Deer River. The earth fill will cover a lineal distance of approximately 500 feet with an average height of fill about 5 feet.

Fill will also be placed in two wetland areas within the plant site itself in order to bring the plant grade to elevation 16.0 MSL. Concrete sheet pilings will be driven along the northeast corner of the plant site along the edge of the fill to minimize construction in the wetland area.

A concrete outlet structure, with riprap, will be constructed at the southwest corner of the plant site adjacent to the Theodore Ship Channel. The outlet structure will serve as a discharge point for the settling basin as shown on the attached plan.

The trestle for the railroad and the bridge within the plant access road have not been included in this Public Notice since they are currently being processed by the Eighth Coast Guard District, New Orleans. If the Coast Guard declines jurisdiction at a later date, an additional public notice will be advertised.

All work to be performed on or adjacent to the applicant's property within the Theodore Industrial Park, off Theodore Ship Channel, Mobile Bay, Mobile County Alabama. Plans submitted by the applicant are attached to this notice.

PLANS SUBMITTED BY THE APPLICANT ARE PRELIMINARY AND BASED ON CONCEPTUAL ENGINEERING STUDIES, NOT DETAILED DESIGN. ANY SUBSTANTIAL DEVIATIONS WILL BE RE-ADVERTISED.

The applicant has applied for certification from the State of Alabama in accordance with Section 401(a)(1) of the Federal Water Pollution Control Act Amendments of 1972; and upon completion of the required advertising, a determination relative to certification will be made.

The Environmental Protection Agency has determined that an Environmental Impact Statement (EIS) is necessary. An EIS is currently being prepared for Ideal Basic Industries' entire operation, both at the Theodore Site and the Quarry Site, Monroe County.

This public notice is being distributed to all known interested persons in order to assist in developing facts on which a decision by the Corps of Engineers can be based. For accuracy and completeness of the record, all data in support of or in opposition to the proposed work should be submitted in writing setting forth sufficient detail to furnish a clear understanding of the reasons for support or opposition. The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered; among those are conservation, economics, aesthetics, general environmental concerns, historic values, fish and wildlife values, flood damage prevention, land use classification, navigation, recreation, water supply, water quality and, in general, the needs and welfare of the people. No permit will be granted unless its issuance is found to be in the public interest.

SAMOP-S 27 April 1978
PUBLIC NOTICE NO. AL78-00057-E

Any person who has an interest which may be adversely affected by the issuance of a permit may request a public hearing. The request must be submitted in writing to the District Engineer within 30 days of the date of this notice and must clearly set forth the interest which may be adversely affected and the manner in which the interest may be adversely affected by the activity.

You are requested to communicate the information contained in this letter to any other parties whom you deem likely to have interest in the matter.

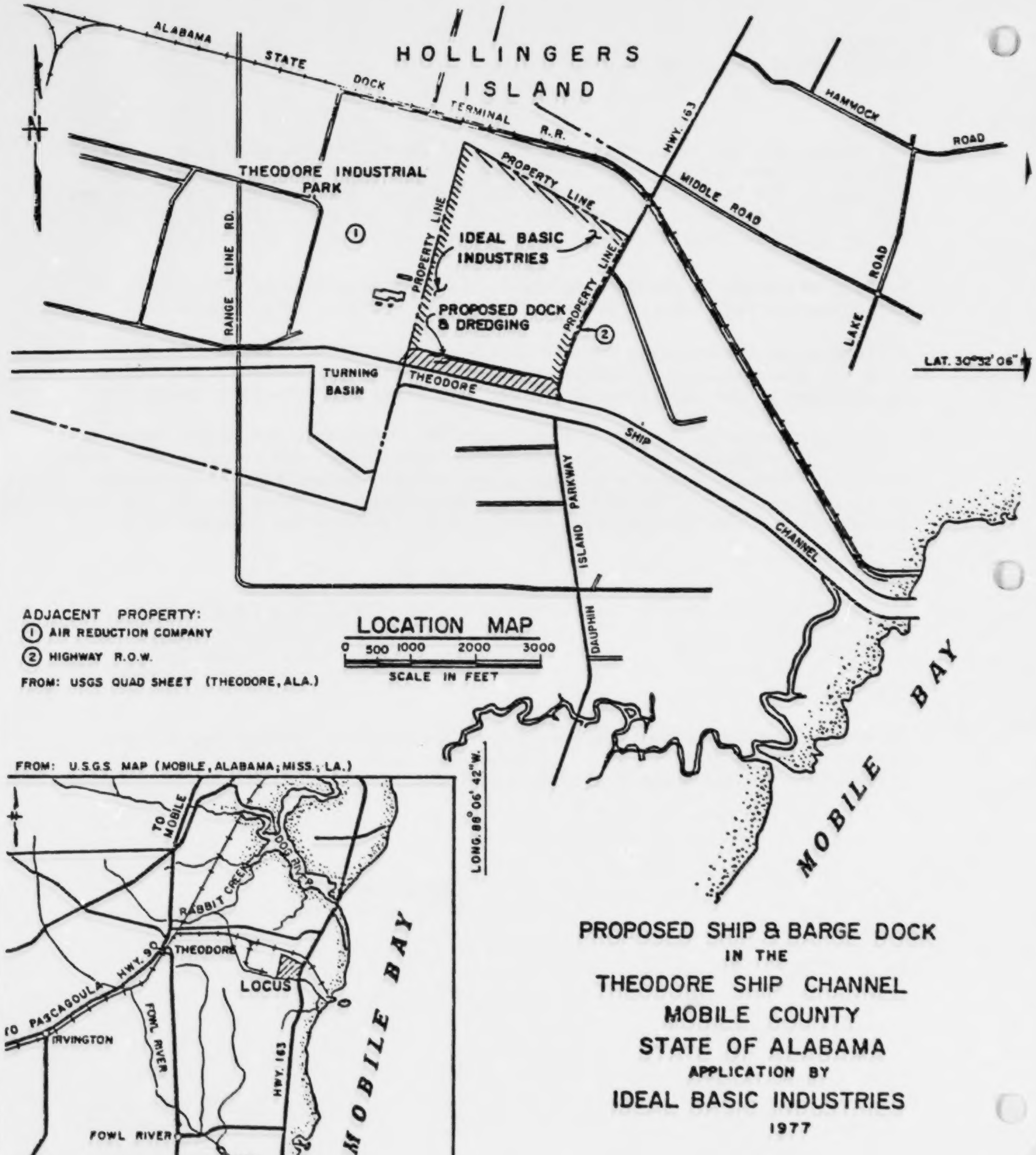
Evaluation of the probable impacts involving deposits of dredged or fill material into navigable waterways will include the application of guidelines established by the Administrator of the Environmental Protection Agency.

No properties listed in the National Register of Historic Places are known to be near the proposed work. The possibility exists that the proposed work may damage or destroy presently unknown archeological, scientific, prehistorical or historical sites or data. Copies of this notice are being sent to the State Archeologist, State Historical Preservation Officer and the National Park Service.

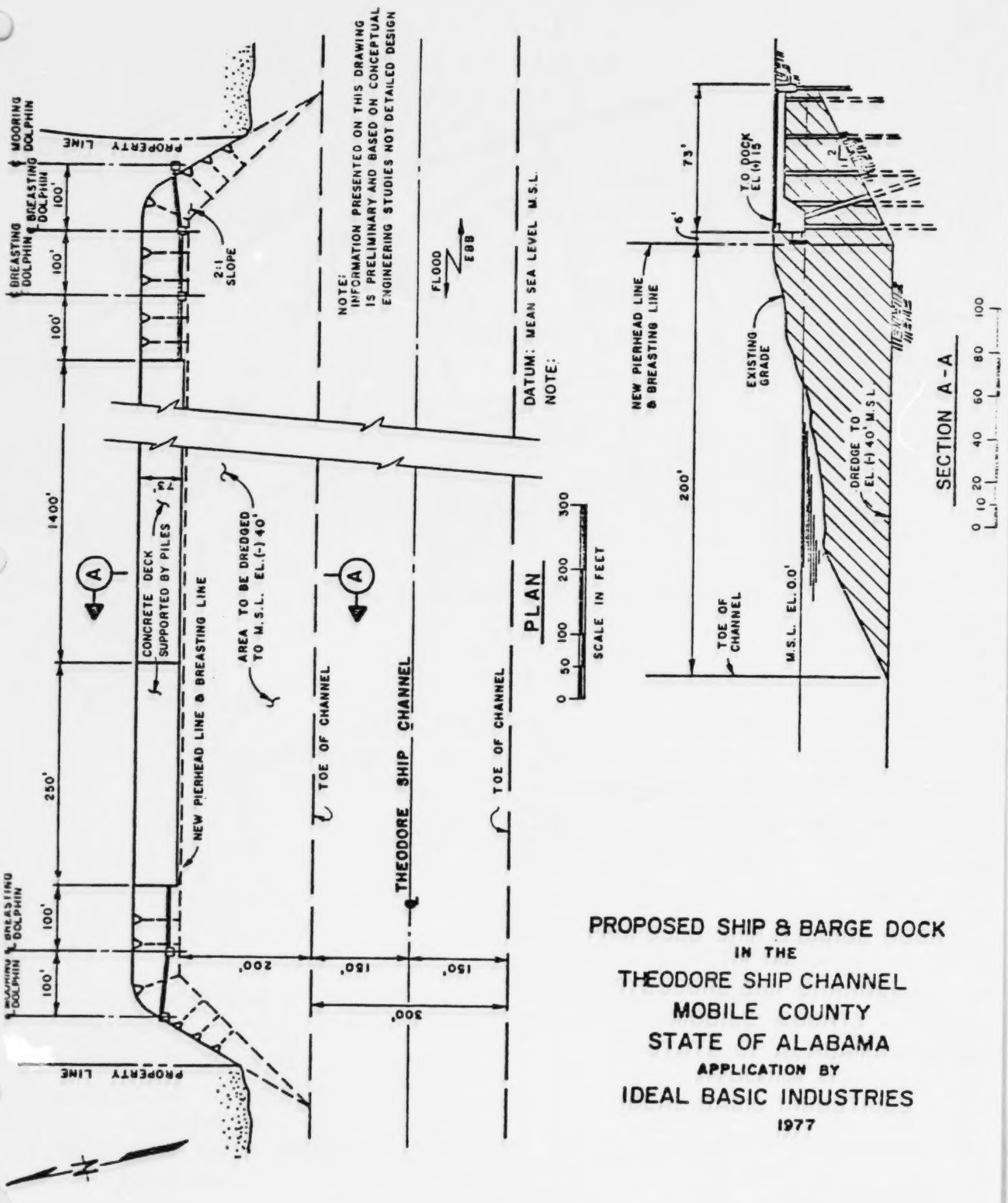
Correspondence concerning this Public Notice should refer to Public Notice No. AL78-00057-E and should be directed to the District Engineer, U. S. Army Engineer District, Mobile, Corps of Engineers, P. O. Box 2288, Mobile, Alabama 36628, ATTN Regulatory Functions Branch, in time to be received prior to 26 May 1978.

If you have any questions concerning this application, you may contact this office, P. A. Flanagan , telephone number (205) 690- 2650
Please refer to the above Public Notice number.

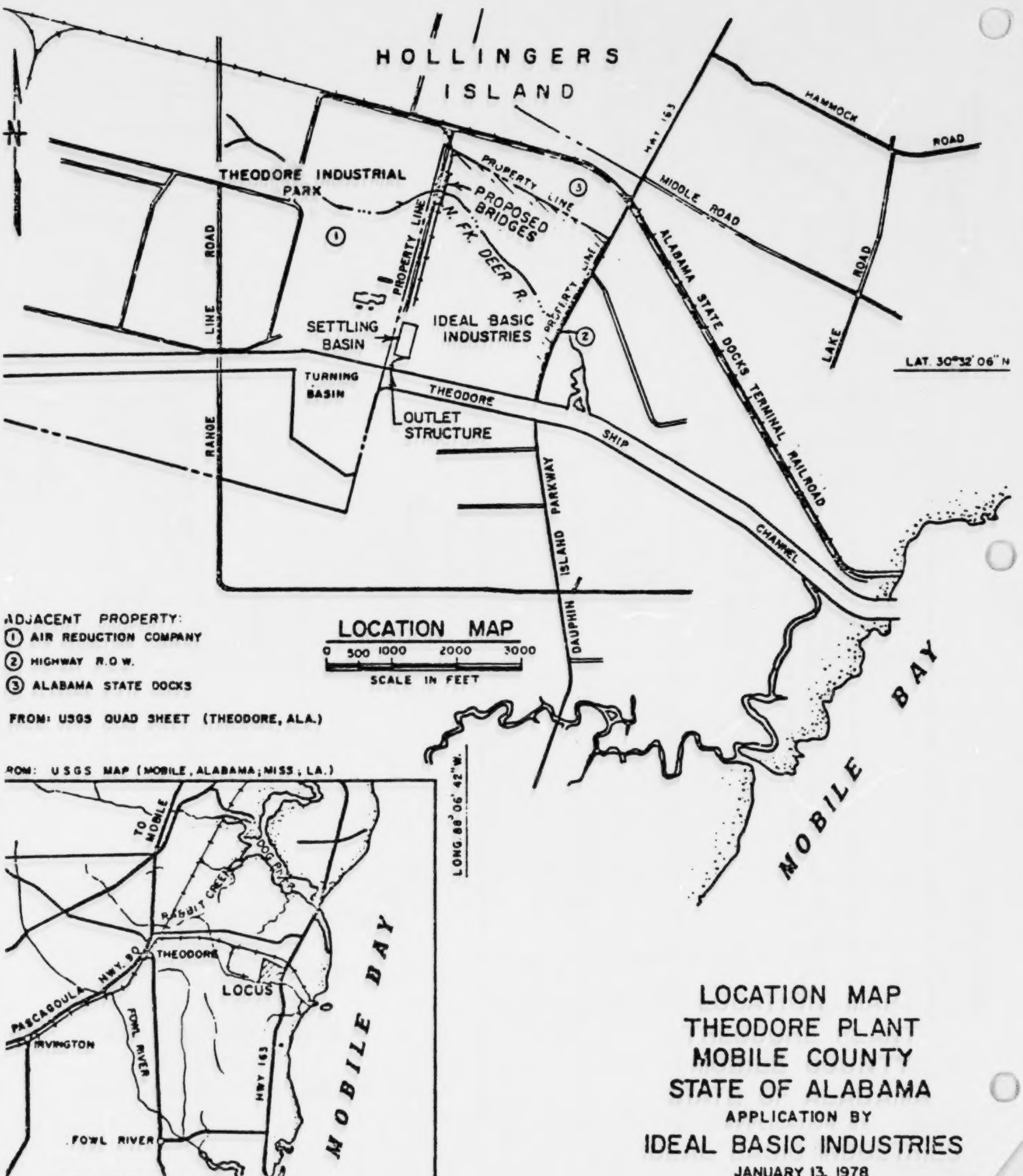
MOBILE DISTRICT
U. S. Army Corps of Engineers


ALABAMA STATE DOCK TERMINAL R.R.
HOLLINGERS ISLAND
HWY. 163
HAMMOCK ROAD
MIDDLE ROAD
LAKE ROAD
THEODORE INDUSTRIAL PARK
①
RANGE LINE RD.
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
IDEAL BASIC INDUSTRIES
PROPOSED DOCK & DREDGING
②
TURNING BASIN
THEODORE SHIP CHANNEL
LAT. 30°32' 06" N
DAUPHIN ISLAND PARKWAY
MOBILE BAY
LONG. 88° 06' 42" W.
ADJACENT PROPERTY:
① AIR REDUCTION COMPANY
② HIGHWAY R.O.W.
FROM: USGS QUAD SHEET (THEODORE, ALA.)
LOCATION MAP
0 500 1000 2000 3000
SCALE IN FEET
FROM: U.S.G.S. MAP (MOBILE, ALABAMA; MISS.; LA.)
TO MOBILE
DOG RIVER
RABBIT CREEK
THEODORE
HWY. 90
TO PASCAGOULA
IRVINGTON
LOCUS
FOWL RIVER
HWY. 163
FOWL RIVER
MOBILE BAY
VICINITY MAP
0 .5 1 2 3 4 5
SCALE IN MILES

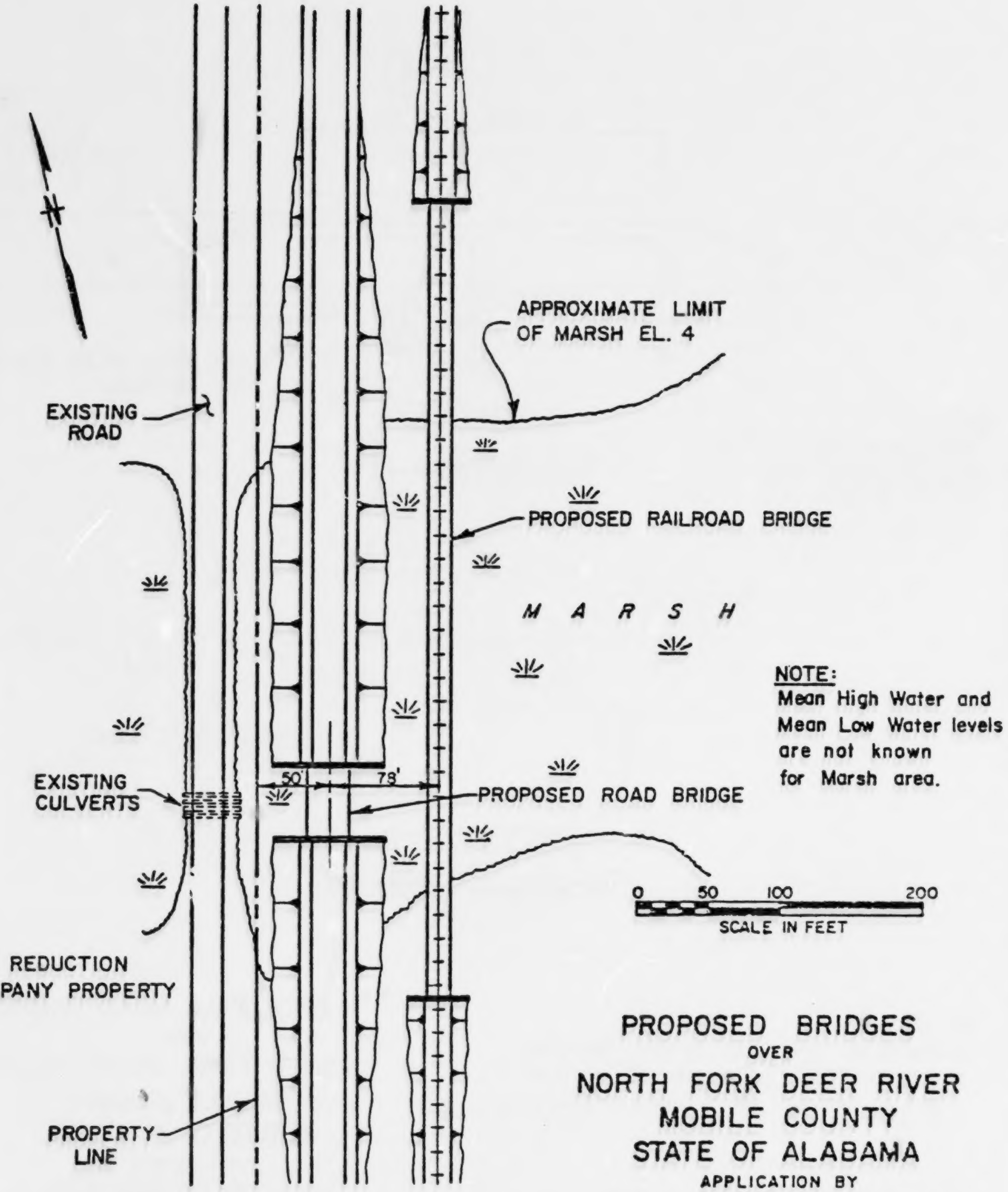
PROPOSED SHIP & BARGE DOCK
IN THE
THEODORE SHIP CHANNEL
MOBILE COUNTY
STATE OF ALABAMA
APPLICATION BY
IDEAL BASIC INDUSTRIES
1977


MOORING DOLPHIN
BREASTING DOLPHIN
BREASTING DOLPHIN
BREASTING DOLPHIN
MOORING DOLPHIN
PROPERTY LINE
PROPERTY LINE
100'
100'
100'
100'
1400'
250'
100'
100'
2:1 SLOPE
NOTE:
INFORMATION PRESENTED ON THIS DRAWING IS PRELIMINARY AND BASED ON CONCEPTUAL ENGINEERING STUDIES NOT DETAILED DESIGN
FLOOD
EBB
DATUM: MEAN SEA LEVEL M.S.L.
NOTE:
73'
CONCRETE DECK SUPPORTED BY PILES
A
A
AREA TO BE DREDGED TO M.S.L. EL.(-) 40'
NEW PIERHEAD LINE & BREASTING LINE
TOE OF CHANNEL
THEODORE SHIP CHANNEL
TOE OF CHANNEL
200'
150'
150'
300'
PLAN
0 50 100 200 300
SCALE IN FEET
N
73'
6'
T.O. DOCK EL.(+) 15'
2
1
NEW PIERHEAD LINE & BREASTING LINE
EXISTING GRADE
200'
DREDGE TO EL.(-) 40' M.S.L.
TOE OF CHANNEL
M.S.L. EL. 0.0'
SECTION A-A
0 10 20 40 60 80 100

PROPOSED SHIP & BARGE DOCK
IN THE
THEODORE SHIP CHANNEL
MOBILE COUNTY
STATE OF ALABAMA
APPLICATION BY
IDEAL BASIC INDUSTRIES
1977


HOLLINGERS ISLAND
N
THEODORE INDUSTRIAL PARK
PROPERTY LINE
PROPOSED BRIDGES
N. FK. DEER R.
HWY 163
HAMMOCK ROAD
MIDDLE ROAD
LAKE ROAD
ALABAMA STATE DOCKS TERMINAL RAILROAD
RANGE LINE ROAD
SETTLING BASIN
IDEAL BASIC INDUSTRIES
TURNING BASIN
OUTLET STRUCTURE
THEODORE SHIP CHANNEL
DAUPHIN ISLAND PARKWAY
LAT. 30°32'06" N
LONG. 88°06'42" W.
MOBILE BAY
ADJACENT PROPERTY:
① AIR REDUCTION COMPANY
② HIGHWAY R.O.W.
③ ALABAMA STATE DOCKS
FROM: USGS QUAD SHEET (THEODORE, ALA.)
LOCATION MAP
0 500 1000 2000 3000
SCALE IN FEET
ROM: USGS MAP (MOBILE, ALABAMA; MISS.; LA.)
TO MOBILE
DOG RIVER
RABBIT CREEK
THEODORE
LOCUS
PASCAGOULA HWY. 90
IRVINGTON
FOWL RIVER
HWY 163
FOWL RIVER
MOBILE BAY
VICINITY MAP
0 1 2 3 4 5
SCALE IN MILES

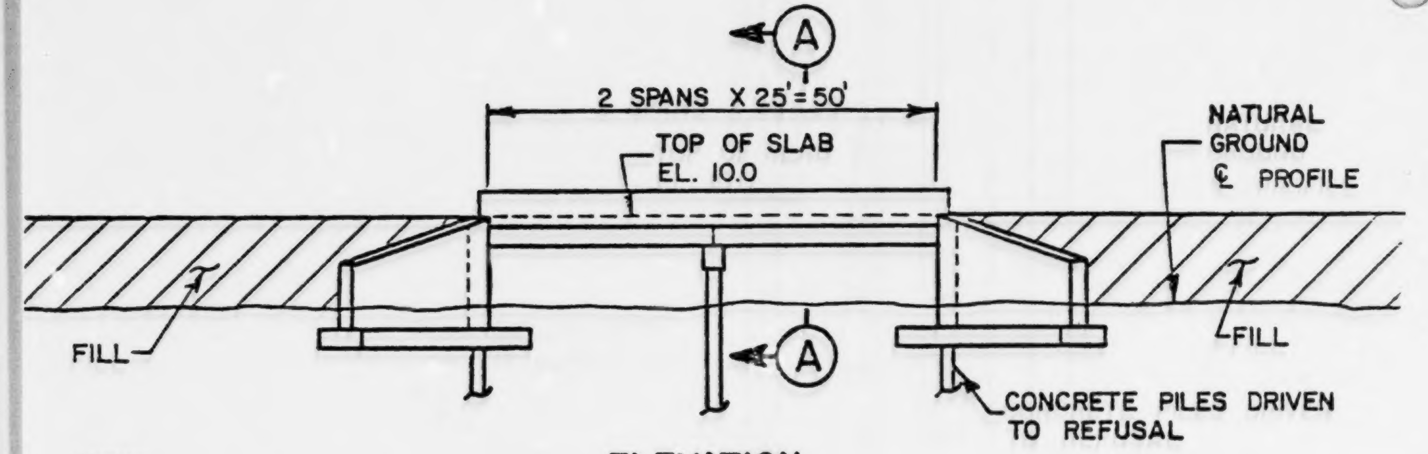
LOCATION MAP
THEODORE PLANT
MOBILE COUNTY
STATE OF ALABAMA
APPLICATION BY
IDEAL BASIC INDUSTRIES
JANUARY 13, 1978


APPROXIMATE LIMIT OF MARSH EL. 4
EXISTING ROAD
PROPOSED RAILROAD BRIDGE
M A R S H
EXISTING CULVERTS
50'
78'
PROPOSED ROAD BRIDGE
AIR REDUCTION COMPANY PROPERTY
PROPERTY LINE
0
50
100
200
SCALE IN FEET

NOTE:
Mean High Water and
Mean Low Water levels
are not known
for Marsh area.

PROPOSED BRIDGES
OVER
NORTH FORK DEER RIVER
MOBILE COUNTY
STATE OF ALABAMA
APPLICATION BY
IDEAL BASIC INDUSTRIES
JANUARY 13, 1978

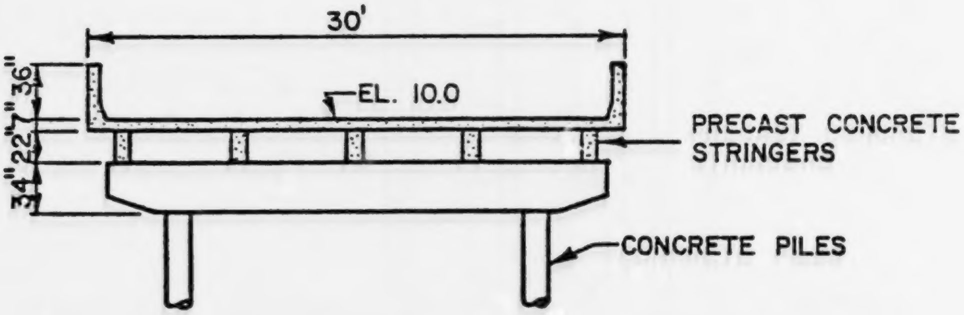
NOTE: Information presented on this drawing is preliminary and based on conceptual engineering studies not detailed design.


A
2 SPANS X 25'=50'
TOP OF SLAB
EL. 10.0
NATURAL
GROUND
℄ PROFILE
FILL
A
FILL
CONCRETE PILES DRIVEN
TO REFUSAL

**NOTE:**
Mean High Water and
Mean Low Water levels
are not known
for Marsh area.

ELEVATION

0 5 10 20 30
SCALE IN FEET


30'
36"
7"
22"
34"
EL. 10.0
PRECAST CONCRETE
STRINGERS
CONCRETE PILES

SECTION A-A

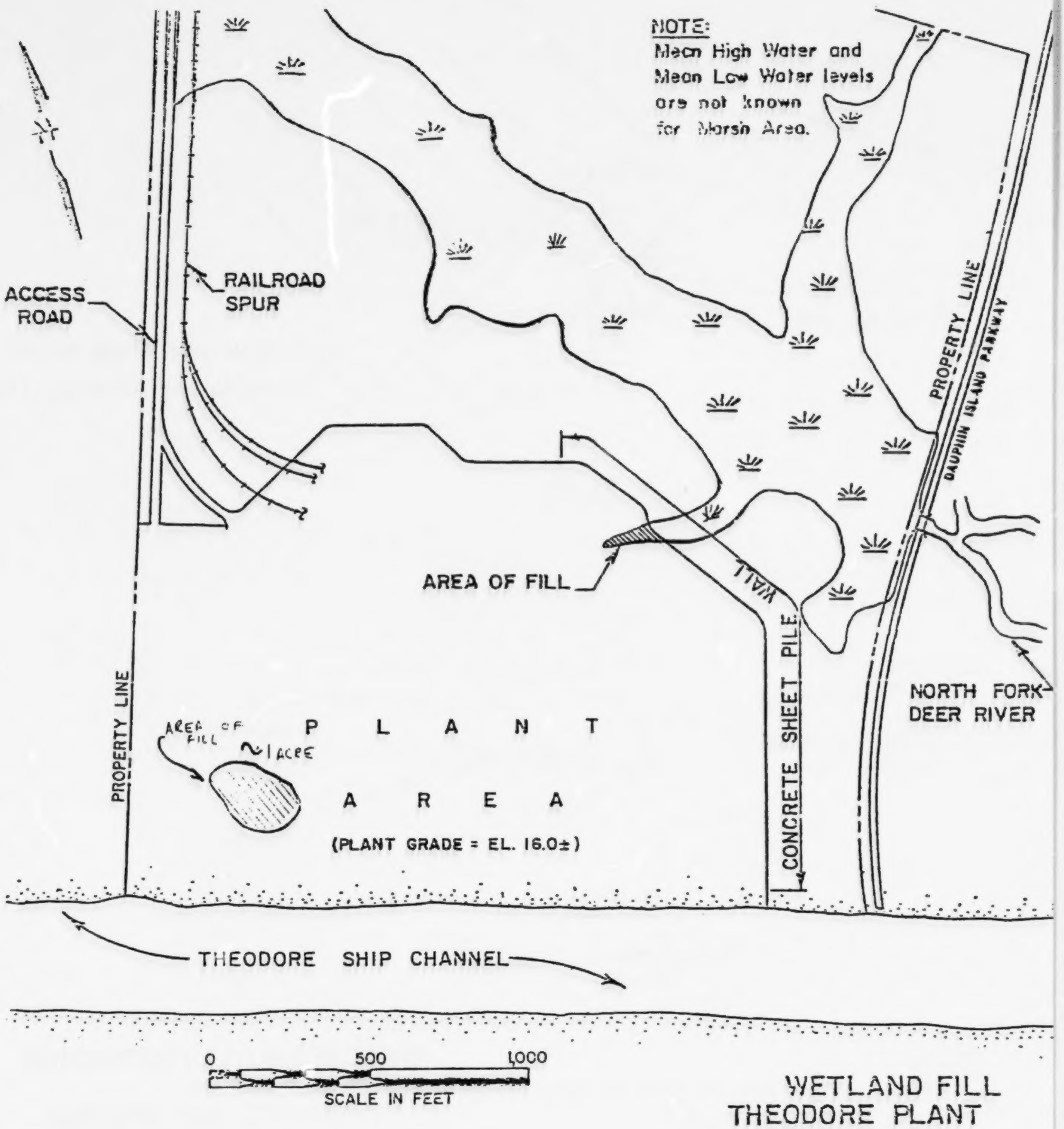
0 5 10 20
SCALE IN FEET

**NOTES:**

1. Elevations shown refer to Mean Sea Level.
2. Approximately 4450 cubic yards of select granular material will be used for fill.

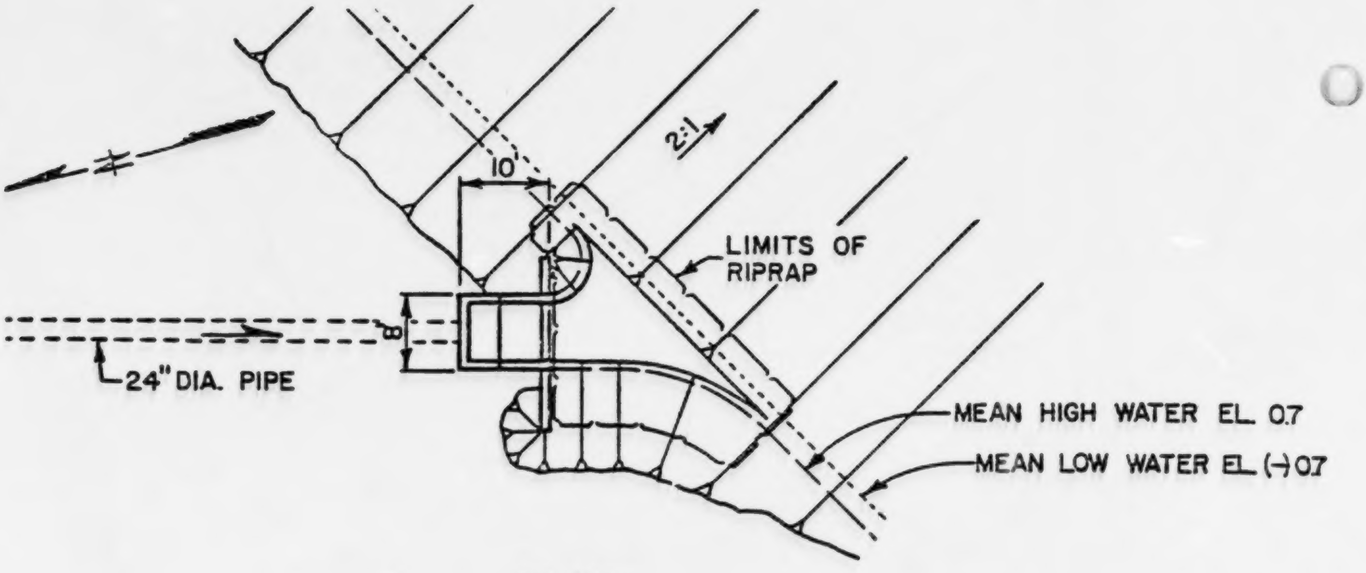
PROPOSED ROAD BRIDGE
OVER
NORTH FORK DEER RIVER
MOBILE COUNTY
STATE OF ALABAMA
APPLICATION BY
IDEAL BASIC INDUSTRIES
JANUARY 13, 1978

NOTE: Information presented on this drawing is preliminary and based on conceptual engineering studies not detailed design.

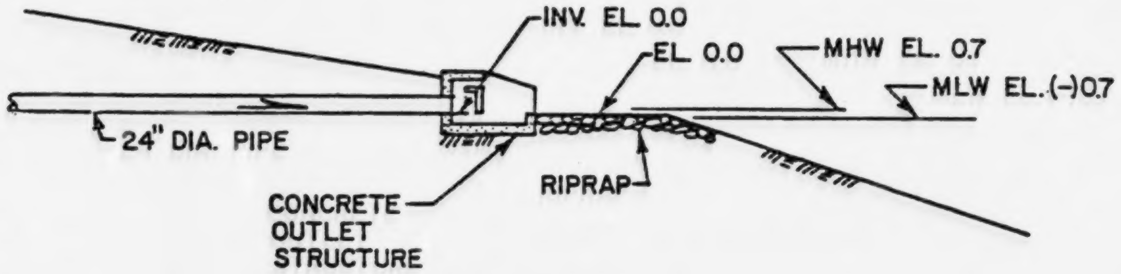

NOTE:
Mean High Water and
Mean Low Water levels
are not known
for Marsh Area.
ACCESS ROAD
RAILROAD SPUR
PROPERTY LINE
DAUPHIN ISLAND PARKWAY
AREA OF FILL
WALL
CONCRETE SHEET PILE
NORTH FORK DEER RIVER
PROPERTY LINE
AREA OF FILL
~1 ACRE
PLANT
AREA
(PLANT GRADE = EL. 16.0±)
THEODORE SHIP CHANNEL
0
500
1000
SCALE IN FEET

WETLAND FILL
THEODORE PLANT
MOBILE COUNTY
STATE OF ALABAMA
APPLICATION BY
IDEAL BASIC INDUSTRIES
FEBRUARY 14, 1978

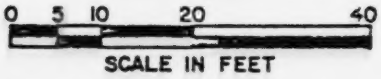
NOTE: Information presented on this drawing is preliminary and based on conceptual engineering studies not detailed design.


10'
8'
2:1
LIMITS OF RIPRAP
24" DIA. PIPE
MEAN HIGH WATER EL. 0.7
MEAN LOW WATER EL. (-) 0.7

PLAN


INV. EL. 0.0
EL. 0.0
MHW EL. 0.7
MLW EL. (-) 0.7
24" DIA. PIPE
RIPRAP
CONCRETE OUTLET STRUCTURE

PROFILE


0
5
10
20
40
SCALE IN FEET

NOTES:

1. Elevations shown refer to Mean Sea Level.

PROPOSED OUTLET STRUCTURE
IN THE
THEODORE SHIP CHANNEL
MOBILE COUNTY
STATE OF ALABAMA
APPLICATION BY
IDEAL BASIC INDUSTRIES
JANUARY 13, 1978

NOTE: Information presented on this drawing is preliminary and based on conceptual engineering studies not detailed design.

# JOINT PUBLIC NOTICE--U.S. ARMY CORPS OF ENGINEERS AND ALABAMA WATER IMPROVEMENT COMMISSION (QUARRY SITE)

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 2288
MOBILE, ALABAMA 36628

REPLY TO
ATTENTION OF:

# JOINT PUBLIC NOTICE

# U. S. ARMY CORPS OF ENGINEERS

AND

# STATE OF ALABAMA

# WATER IMPROVEMENT COMMISSION

SAMOP-S
PUBLIC NOTICE NO. AL78-00056-E

10 April 1978

PROPOSED BARGE DOCK AND FILL ASSOCIATED WITH CLARIFICATION BASINS, ALABAMA RIVER, APPROXIMATELY MI. 54, MONROE COUNTY, ALABAMA

TO WHOM IT MAY CONCERN:

This District has received an application for a Department of the Army permit pursuant to Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403), and Section 404 of the Federal Water Pollution Control Act (PL 92-500, 33 U.S.C. 1344), as described below:

APPLICANT: Ideal Basic Industries
c/o Mr. G. M. Lochhead, P.E., Chief Engineer
P.O. Box 8789
Denver, CO 80201

WATERWAY: Alabama River, Approximately Mile 54
Monroe County, Alabama

WORK: Construct a barge dock, adjacent to the shoreline, on the Alabama River, approximately Mile 54. The dock , 636 ft. long, will extend approximately 100 ft. beyond the MHW line. A conveyor system,located at the center of the dock, will connect to on shore facilities and will extend an additional 80' into the Alabama River. The barge dock will provide water access to Ideal Basic Industries quarry site. Additionally, clarification basins and outlet facilities will be constructed to provide effective storage capacities for stormwater runoff. These basins will provide a sediment trap for all runoff from the disturbed quarry and limestone storage area. Only those basins adjacent to the Alabama River which are below the OHW will be required to have Department of Army Permits. All work to be performed adjacent to the applicant's property on the Alabama River, approximately mile 54, Monroe County, Alabama. Plans submitted by the applicant are attached to this notice.

PLANS SUBMITTED BY THE APPLICANT ARE PRELIMINARY AND BASED ON CONCEPTUAL ENGINEERING STUDIES NOT DETAILED DESIGN. ANY SUBSTANTIAL DEVIATIONS WILL BE RE-ADVERTISED.

The applicant has applied for certification from the State of Alabama in accordance with Section 401(a)(1) of the Federal Water Pollution Control Act Amendments of 1972; and upon completion of the required advertising, a determination relative to certification will be made.

A preliminary assessment of environmental, social and other factors indicates that an environmental impact statement is not required. Permit assessment is a continuing process. This preliminary determination of EIS requirement will be changed if data or information brought forth in the coordination process is of a significant nature.

This public notice is being distributed to all known interested persons in order to assist in developing facts on which a decision by the Corps of Engineers can be based. For accuracy and completeness of the record, all data in support of or in opposition to the proposed work should be submitted in writing setting forth sufficient detail to furnish a clear understanding of the reasons for support or opposition. The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered; among those are conservation, economics, aesthetics, general environmental concerns, historic values, fish and wildlife values, flood damage prevention, land use classification, navigation, recreation, water supply, water quality and, in general, the needs and welfare of the people. No permit will be granted unless its issuance is found to be in the public interest.

Any person who has an interest which may be adversely affected by the issuance of a permit may request a public hearing. The request must be submitted in writing to the District Engineer within 30 days of the date of this notice and must clearly set forth the interest which may be adversely affected and the manner in which the interest may be adversely affected by the activity.

You are requested to communicate the information contained in this letter to any other parties whom you deem likely to have interest in the matter.

Evaluation of the probable impacts involving deposits of dredged or fill material into navigable waterways will include the application of guidelines established by the Administrator of the Environmental Protection Agency.

No properties listed in the National Register of Historic Places are known to be near the proposed work. The possibility exists that the proposed work may damage or destroy presently unknown archeological, scientific, prehistorical or historical sites or data. Copies of this notice are being sent to the State Archeologist, State Historical Preservation Officer and the National Park Service.

SAMOP-S
PUBLIC NOTICE NO. AL78-00056-E

10 April 1978

Correspondence concerning this Public Notice should refer to Public Notice No. AL78-00056-E and should be directed to the District Engineer, U. S. Army Engineer District, Mobile, Corps of Engineers, P. O. Box 2288, Mobile, Alabama 36628, ATTN Regulatory Functions Branch, in time to be received prior to 8 May 1978.

If you have any questions concerning this application, you may contact this office, P. A. Flanagan , telephone number (205) 690-2658 Please refer to the above Public Notice number.

MOBILE DISTRICT
U. S. Army Corps of Engineers

## GAILLARD QUARRY

## CLARIFICATION BASINS ALONG ALABAMA RIVER

As the limestone quarry area is being developed, the open faces of limestone and other subsurface soil subject to stormwater surface runoff will erode and could create a turbidity and sediment problem in nearby streams and wetland areas. Storm runoff from all of the process operations will contain suspended solids of varying concentrations.

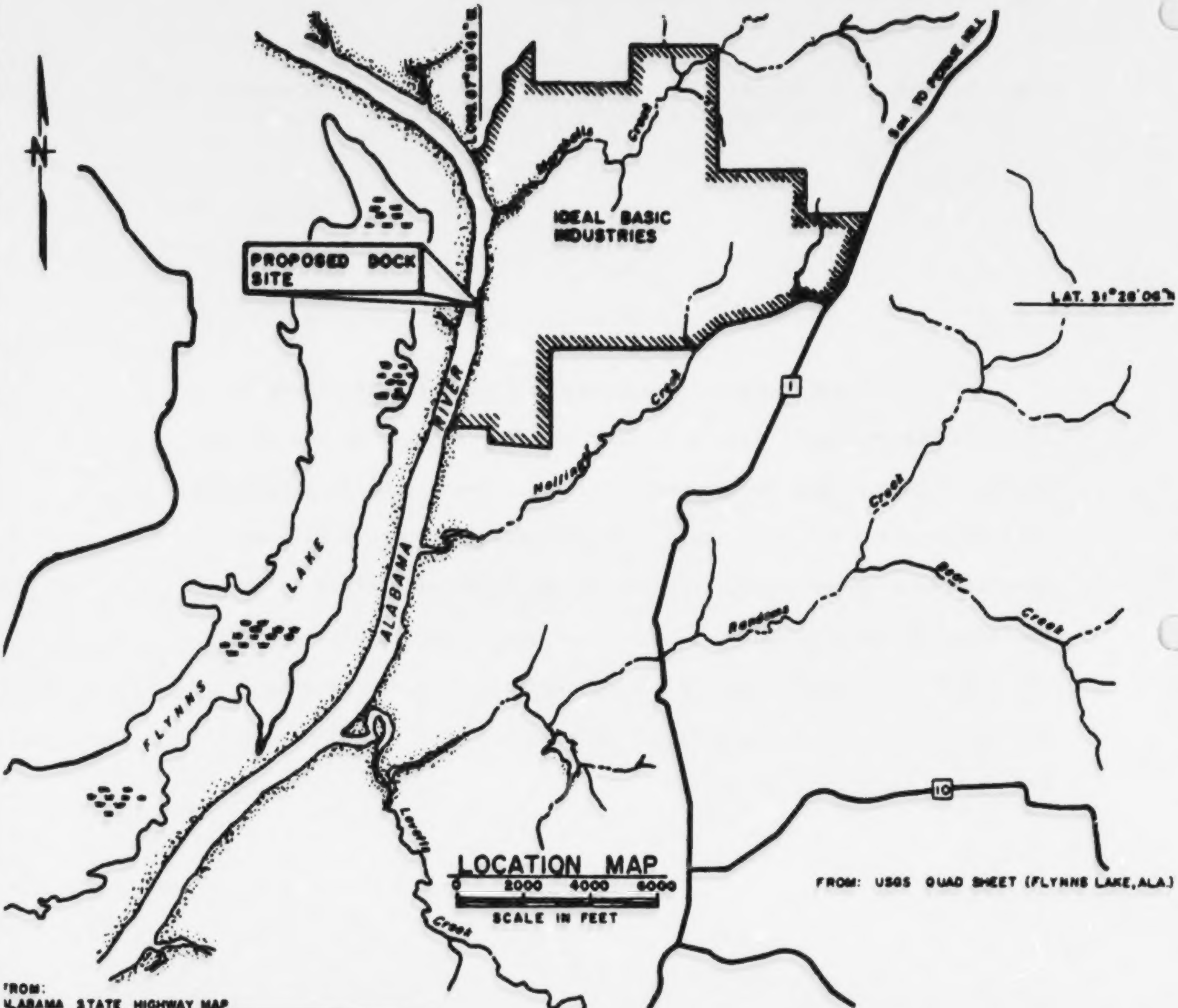
During the operating life of the quarry at least five clarification basins will be required for controlling sediment and water quality of the storm runoff from the disturbed areas. However, during the first five years of quarry operation it is anticipated that only Clarification Basins Nos.1,2 & 5 will be needed and therefore are the only ones which are to be included as part of the initial construction of the quarry facilities. Since detailed design engineering for these clarification basins has not been completed, the information presented herein represents only the best available based on conceptual engineering studies.

The embankment for Clarification Basin No. 5 may not require the issuance of a fill permit from the Department of Army since the streambed elevation at this location is considerably higher than the established ordinary high water elevation of 34.0 feet MSL for the Alabama River at the Gaillard Quarry site.

The clarification basin embankment will be an earthfill dam with an impervious clay core. The preliminary information for each clarification basin embankment is as shown in the following table:

| Clarification Basin | Streambed Elevation | Top Elevation | Length of Embankment | Earthwork Volume |
|---|---|---|---|---|
| | MSL | MSL | FEET | CY |
| 1 | 23 | 60 | 270 | 18,790 |
| 2 | 23 | 75 | 475 | 80,650 |
| 5 | 55 | 105 | 485 | 69,100 |

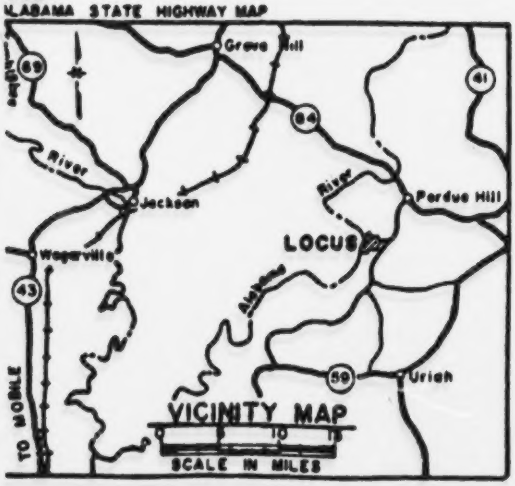
All clarification basins would have a flood storage volume to storm the storm runoff from a 10-year 24-hour rainfall on top of the storage volume allocated for sedimentation. Two discharge structures will be provided for each basin. One discharge structure will be utilized as a decanting facility while the other will serve as an emergency spillway sized to accommodate flood flows resulting from a 100 year storm. The suspended solids concentration discharging from the basins into the Alabama River, under the normal conditions, will be limited to 25 mg/l or less.


N
LONG. 87°38'48"W
Hollingers Creek
Creek
IDEAL BASIC INDUSTRIES
PROPOSED DOCK SITE
5 mi. TO PERDUE HILL
LAT. 31°28'06"N
1
Hollinger Creek
ALABAMA RIVER
FLYNNS LAKE
Creek
Bear Creek
Randons
10
Lovetts Creek
0
2000
4000
6000
SCALE IN FEET

LOCATION MAP

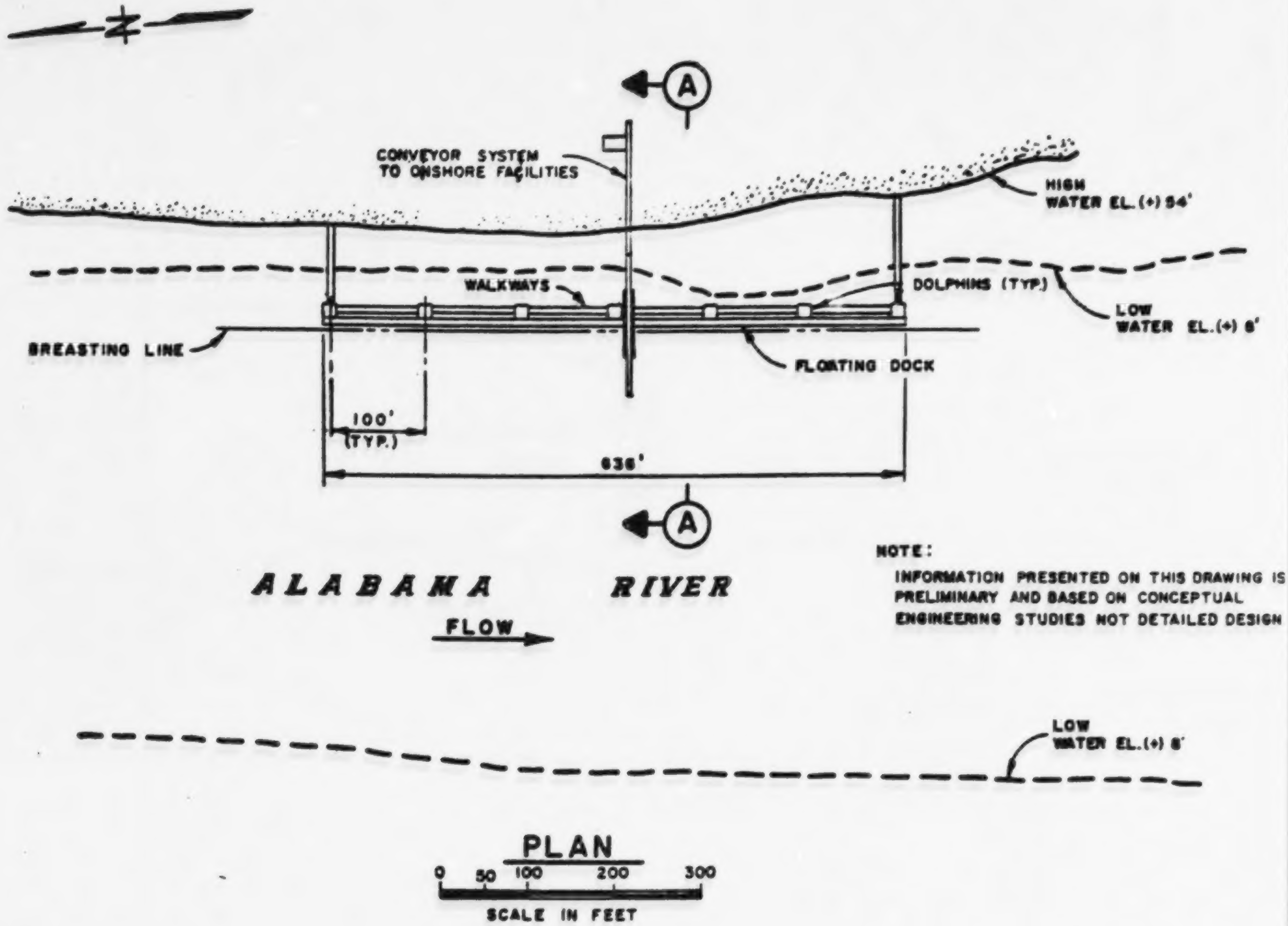
FROM: USGS QUAD SHEET (FLYNNS LAKE, ALA.)

FROM:
ALABAMA STATE HIGHWAY MAP


Grove Hill
69
41
84
River
Jackson
River
Perdue Hill
LOCUS
Wagarville
43
Alabama
59
Uriah
TO MOBILE
0
5
10
15
SCALE IN MILES

VICINITY MAP

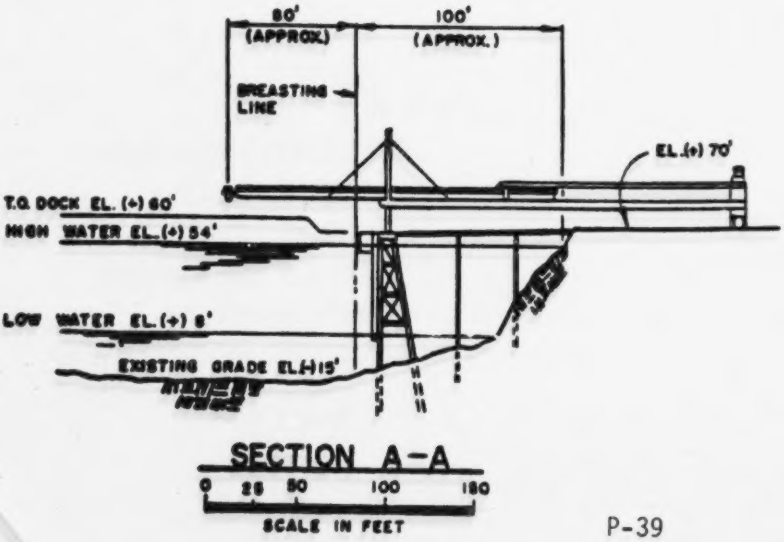
PROPOSED BARGE DOCK
IN THE
ALABAMA RIVER
MONROE COUNTY
STATE OF ALABAMA
APPLICATION BY
IDEAL BASIC INDUSTRIES
1977
SHEET 1 OF 2


N
A
CONVEYOR SYSTEM TO ONSHORE FACILITIES
HIGH WATER EL. (+) 54'
WALKWAYS
DOLPHINS (TYP.)
LOW WATER EL. (+) 8'
BREASTING LINE
FLOATING DOCK
100' (TYP.)
636'
A
ALABAMA RIVER
FLOW
LOW WATER EL. (+) 8'
0 50 100 200 300
SCALE IN FEET

NOTE:
INFORMATION PRESENTED ON THIS DRAWING IS PRELIMINARY AND BASED ON CONCEPTUAL ENGINEERING STUDIES NOT DETAILED DESIGN

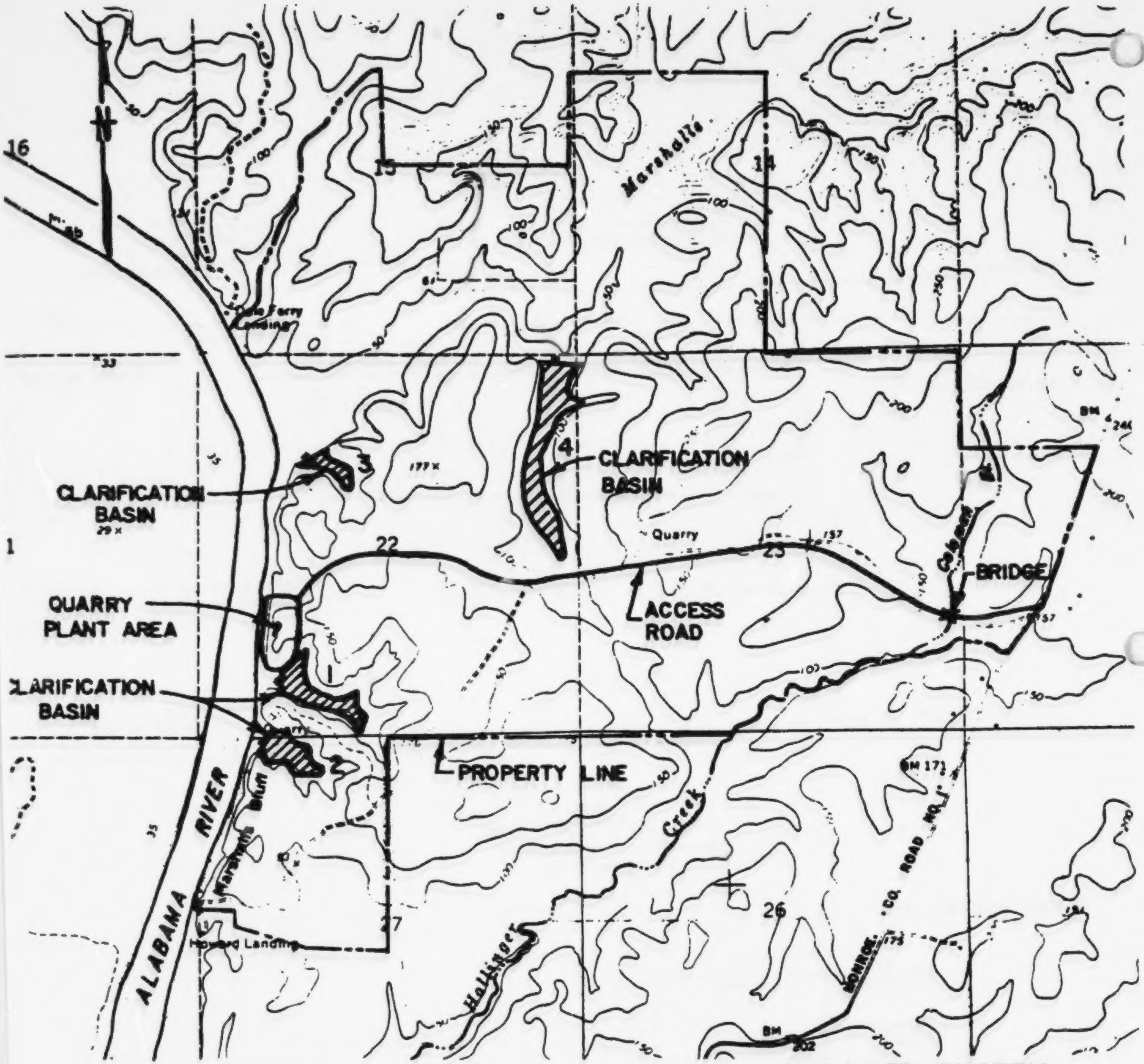
PLAN

DATUM: MEAN SEA LEVEL


80' (APPROX.)
100' (APPROX.)
BREASTING LINE
EL. (+) 70'
T.O. DOCK EL. (+) 60'
HIGH WATER EL. (+) 54'
LOW WATER EL. (+) 8'
EXISTING GRADE EL. (-) 15'
0 25 50 100 150
SCALE IN FEET

SECTION A-A

**PROPOSED BARGE DOCK**
**IN THE**
**ALABAMA RIVER**
**MONROE COUNTY**
**STATE OF ALABAMA**
**APPLICATION BY**
**IDEAL BASIC INDUSTRIES**
**1977**
**SHEET 2 OF 2**


16
15
14
Marshalls
CLARIFICATION BASIN
3
4
CLARIFICATION BASIN
Quarry
22
23
BRIDGE
QUARRY PLANT AREA
ACCESS ROAD
1
CLARIFICATION BASIN
2
PROPERTY LINE
Creek
26
27
ALABAMA RIVER
Marshalls Bluff
Howard Landing
Hollinger
MONROE CO. ROAD NO. 1
BM 202
BM 173
BM 240

**NOTE:**

Map base is 7 1/2' USGS Quadrangle Sheets. Elevations shown are in feet. Datum is Mean Sea Level.

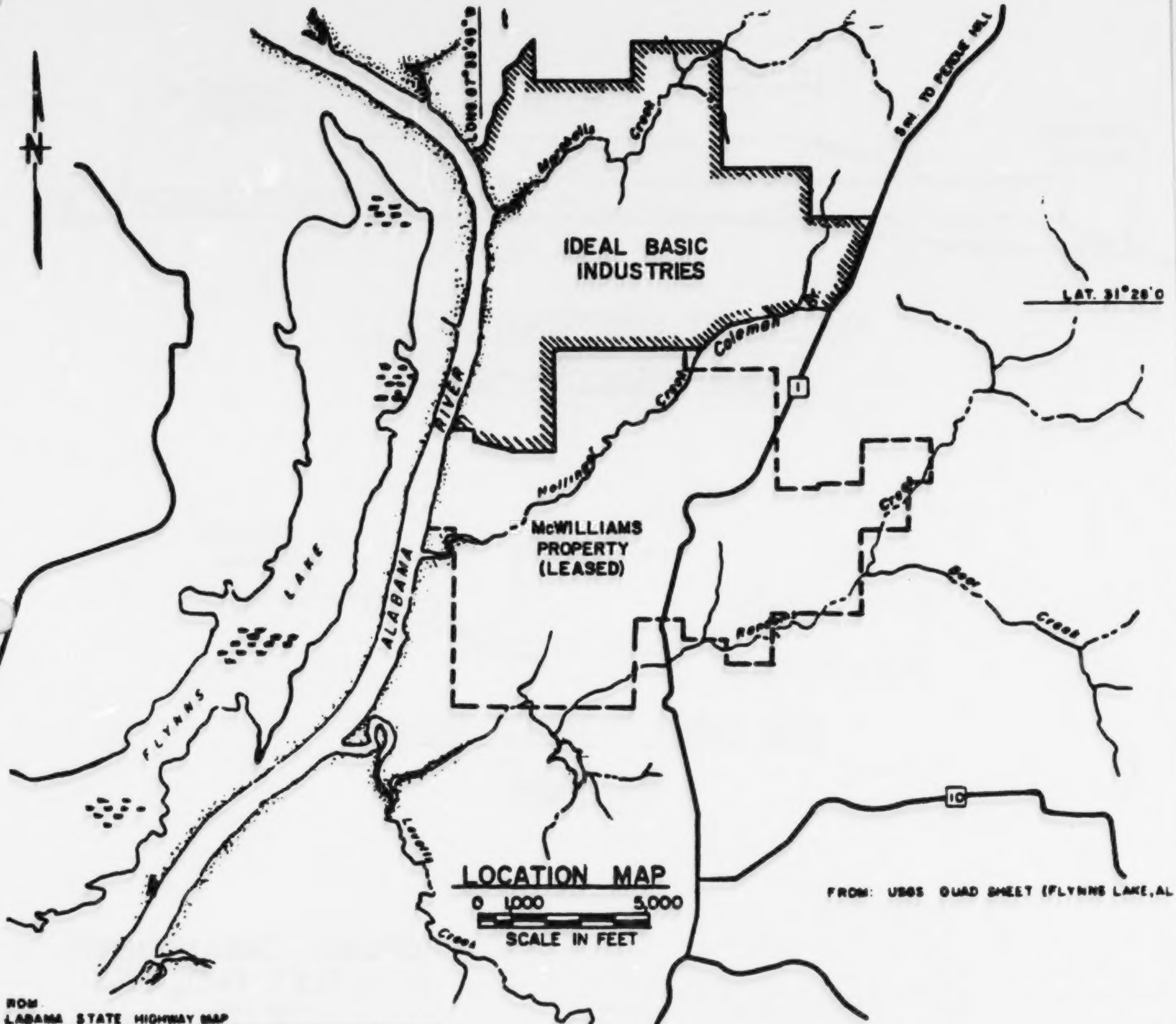
# GAILLARD QUARRY
# SITE MAP
# MONROE COUNTY
# STATE OF ALABAMA

APPLICATION BY

## IDEAL BASIC INDUSTRIES

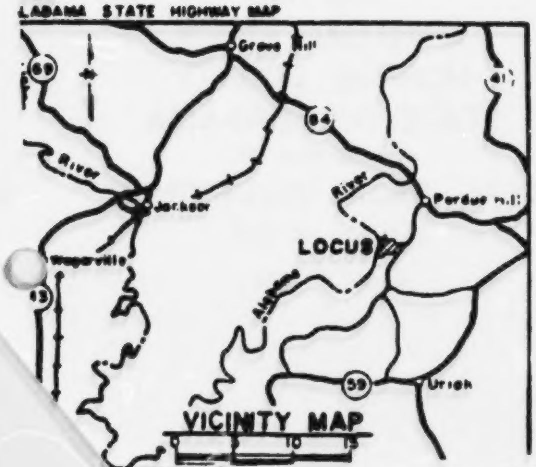
JANUARY 13, 1978

SHEET 2 OF 5


LONG. 87°30'00"W
IDEAL BASIC INDUSTRIES
Creek
Coleman
Creek
Hollinger
RIVER
ALABAMA
FLYNNS LAKE
McWILLIAMS PROPERTY (LEASED)
Creek
Creek
Creek
LAT. 31°28'0
1
10
Sel. TO PERDUE HILL
N
LOCATION MAP
0 1,000 5,000
SCALE IN FEET

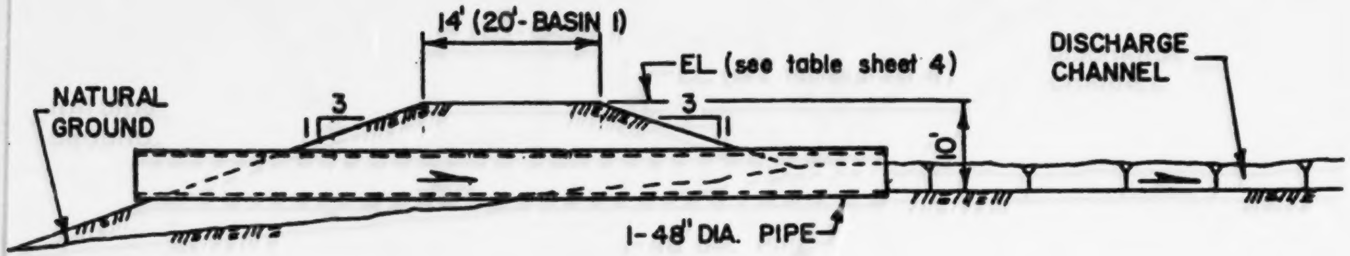
FROM: USGS QUAD SHEET (FLYNNS LAKE, AL

ROM.
LABAMA STATE HIGHWAY MAP


Grove Hill
69
84
41
River
Jackson
River
Perdue Hill
LOCUS
Wagarville
43
Alabama
59
Uriah
VICINITY MAP
0 5 10 15

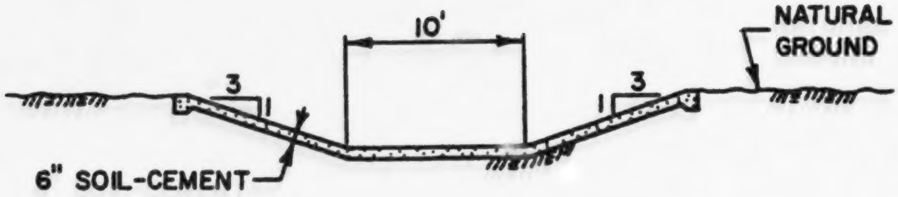
P-41

LOCATION MAP
GAILLARD QUARRY
MONROE COUNTY
STATE OF ALABAMA
APPLICATION BY
IDEAL BASIC INDUSTRIES
JANUARY 13, 1978
SHEET 1 OF 5


14' (20'- BASIN 1)
EL (see table sheet 4)
DISCHARGE CHANNEL
NATURAL GROUND
3
1
3
1
10'
1-48" DIA. PIPE

## SECTION AT EMERGENCY OUTLET

0 5 10 20 30 40 50
SCALE IN FEET

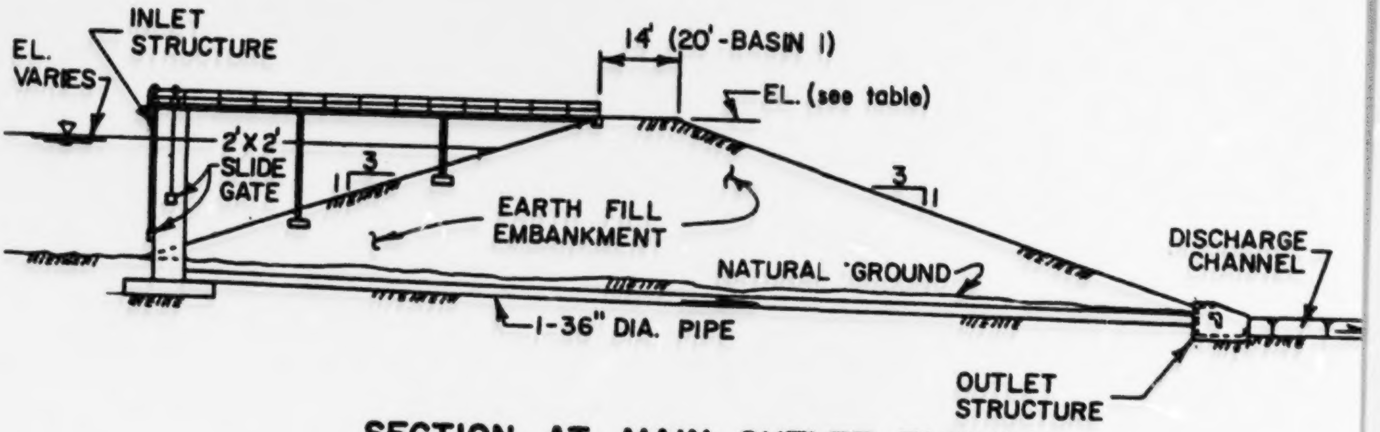

10'
NATURAL GROUND
3
1
3
1
6" SOIL-CEMENT

## DISCHARGE CHANNEL SECTION

0 5 10
SCALE IN FEET

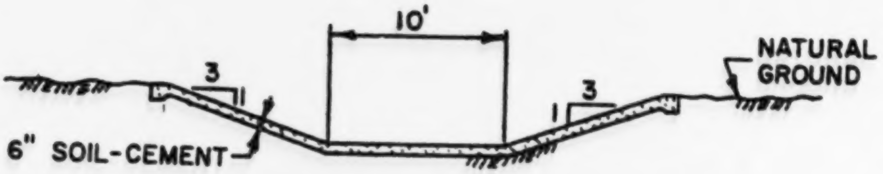
**PROPOSED EMBANKMENTS**
**& OUTLET FACILITIES**
NEAR THE
**ALABAMA RIVER**
**MONROE COUNTY**
**STATE OF ALABAMA**
APPLICATION BY
**IDEAL BASIC INDUSTRIES**
JANUARY 13, 1978
SHEET 5 OF 5

NOTE: Information presented on this drawing is preliminary and based on conceptual engineering studies not detailed design.


EL. VARIES
INLET STRUCTURE
14' (20'-BASIN 1)
EL. (see table)
2'x2' SLIDE GATE
3
1
EARTH FILL EMBANKMENT
3
1
DISCHARGE CHANNEL
NATURAL GROUND
1-36" DIA. PIPE
OUTLET STRUCTURE

## SECTION AT MAIN OUTLET FACILITY

0 50 100
SCALE IN FEET


10'
3
1
3
1
NATURAL GROUND
6" SOIL-CEMENT

## DISCHARGE CHANNEL SECTION

0 5 10
SCALE IN FEET

| BASIN NUMBER | TOP OF EMB. EL. |
|---|---|
| 1 | 75 |
| 2 | 60 |
| 3 | 70 |
| 4 | 105 |

NOTE: Information presented on this drawing is preliminary and based on conceptual engineering studies not detailed design.

PROPOSED EMBANKMENTS
& OUTLET FACILITIES
NEAR THE
ALABAMA RIVER
MONROE COUNTY
STATE OF ALABAMA
APPLICATION BY
IDEAL BASIC INDUSTRIES
JANUARY 13, 1978

SHEET 4 OF 5

# EPA'S AUTHORITY TO CONSTRUCT (EPA REGULATIONS FOR THE PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY, 40 CFR 52.21
## CEMENT PLANT

[The limestone quarry is not included in this authority. Prior to the public hearing for this project, a final determination will be made concerning the applicability of 40 CFR 52.21 to the quarry operation.]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30308

MAR 30 1978

Mr. Robert J. Castelli
Director of Environmental Quality
Ideal Basic Industries
Post Office Box 8789
Denver, Colorado 80201

Dear Mr. Castelli:

This letter refers to the Ideal Basic Industries applying on November 20, 1977, to the Mobile County Board of Health for a permit to construct a cement plant in Theodore Industrial Park, Theodore, Alabama.

The Mobile County Board of Health performed the Prevention of Significant Deterioration (PSD) New Source Review (40 CFR 52.21) which includes an engineering and air quality analysis.

The preliminary review of the application for permit to construct was subject to a 30-day public comment period beginning January 12, 1978. EPA made comments during that period concerning Best Available Control Technology (BACT) for the cement plant. On February 22, 1978, the Mobile County Board of Health submitted to EPA their final determination for the cement plant including copies of Draft County Permits to Construct.

Because the authority for enforcement of PSD regulations in Alabama presently rests with the EPA, we have reviewed the final determination. On the basis of our review, we have determined, subject to the enclosed conditions of approval, that the operation of the cement plant will not cause a violation of National Ambient Air Quality Standards and the Class II PSD increments for sulfur dioxide and particulates and will meet the Federal requirements concerning BACT for particulate and sulfur dioxide emissions as amended in the Clean Air Act on August 7, 1977.

This Authority to Construct is hereby issued to Ideal Basic Industries for the cement plant described in your county application as numbers 503-8026-0001 thru 0028, with permit conditions (enclosed) which are hereby made a part of this approval.

Also please note that the Mobile County Board of Health must review and approve specifications for the selected air pollution control devices prior to your issuance of a purchase order. Therefore, we require a monthly progress report to be submitted by your company beginning with this Authority to Construct and ending when the purchase of all control equipment is approved by the Alabama Air Pollution Control Commission.

Please be advised that violation of any condition issued as a part of this approval as well as construction at variance with the permit will be subject to enforcement action. Also, this Authority to Construct applies only to PSD requirements and not to other Federal, State, or local agency permitting requirements.

Authority to Construct shall take effect on the date of this notice. Any questions concerning this approval may be directed to Eliot Cooper of the Air Programs Branch, 404/881-3286.

Sincerely yours,

for John A. Little, Deputy
John A. White
Regional Administrator

Attachment

cc: Mr. James Cooper
Alabama Air Pollution Control Commission

Mr. Johnny Sanders
Mobile County Board of Health

This Approval to Construct would be issued this date Feb. 27, 1978, but for the order entered in Environmental Defense Fund v. Environmental Protection Agency, No. 78-281 (D.D.C.) (entered on February , 1978).

John A. Little

## Permit Conditions

1. This permit is issued on the basis of rules and regulations existing on the date of issuance. In the event additional rules and regulations are adopted, it shall be the permit holders responsibility to comply with such rules.

2. This permit is not transferable. Upon sale or legal transfer, the new owner or operator must apply for a permit within 30 days.

3. This permit is to be kept on file or on display at all times at the facility where the permitted article, machine, or equipment is used. It is to be made readily available for inspection by any and all persons who may request to see it.

4. Nothing in this permit or conditions thereto shall negate any authority granted to the Mobile County Board of Health, Division of Air Pollution Control or Health Officer pursuant to the Alabama Air Pollution Control Act or regulations issued thereunder.

5. Additions and revisions to the conditions of this permit will be made if necessary to insure that the Mobile County Air Pollution Control Rules and Regulations are not violated.

6. Additional monitoring, records and reporting may be required as authorized by Part 1.9 of the Mobile County Air Pollution Control Rules and Regulations.

7. The approved episode plan for particulate matter, sulfur dioxide, nitrogen oxide and hydrocarbons is hereby made a part of and a condition to this permit.

8. A new permit application must be made for new sources, as defined in Part 1.3.29 of the Mobile County Air Pollution Control Rules and Regulations, or for any modification of an existing source, as modification is defined in Part 1.3.26 of said Rules and Regulations.

9. The Health Officer or his authorized representative may enter and inspect any property, premises or place on or at which an air contaminant source is located or is being constructed, installed or established at any reasonable time for the purpose of ascertaining the state of compliance with these regulations. No person shall refuse entry or access to the Health Officer or his authorized representative who requests entry for purposes of inspection, and who presents appropriate credentials; nor shall any person obstruct, hamper or interfere with any such inspection. If requested, the owner or operator of the premises shall receive a report setting forth all facts found which relate to compliance status.

10. This source may not be operated until a Temporary Permit to Operate has been obtained from this office as specified in Part 3.10 of the Mobile County Air Pollution Control Rules and Regulations. This request should be made in writing at least 30 days prior to planned start-up.

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11. Any changes or deviation from the plans and specifications submitted in the application for this permit must be approved by this Division if said changes or deviation may cause an increase in the amount of air contaminants emitted.

12. The methods for reporting maintenance or malfunctioning of equipment shall be in accordance with Part 1.12 of the Mobile County Air Pollution Control Rules and Regulations.

13. In case of shutdown of air pollution control equipment for scheduled maintenance for a period greater than 4 hours, the intent to shutdown shall be reported to the Division of Air Pollution Control at least 24 hours prior to the planned shutdown.

14. In the event there is a breakdown of equipment in such a manner as to cause the increase of emission of air contaminants for a period greater than 4 hours, the person responsible for such equipment shall notify the Division of Air Pollution Control within 24 hours and provide a statement giving all pertinent facts, including the duration of the breakdown. The Division of Air Pollution Control shall also be contacted when the breakdown has been corrected.

15. During construction the applicant must take all precautions to limit the amount of particulate matter in the air. These will include, but are not limited to, the wetting of all dirt roads on a scheduled basis during any dry periods and the use of the best techniques in the burning of vegetation at the plant site. A burning permit must be obtained prior to any open burning.

16. The three total suspended particulate monitoring sites will remain in operation at their present location or at other locations approved by the Mobile County Health Department. The site data must be collected on an every 6 days basis and the collection and analysis must follow all approved guidelines. A semi-annual report of the data will be required.

17. After construction the following measures must be taken to assure the adequate control of fugitive dust emissions:

    a. The application of water, or suitable chemicals on material stockpiles or other surfaces which may create fugitive dust.

    b. All paved surfaces shall be cleaned as necessary.

    c. Paving of all utilized auto or truck traffic roads or areas.

    d. Any spillage clean up is to be done with a vacuum type system or other appropriate equipment as necessary.

    e. The removal from the plant site of all waste materials in a manner to prevent fugitive emissions.

    f. Adequate controls during any unloading or loading operations to minimize spillage and fugitive emissions.

18. Particulate emissions from the coal dryer shall be subject to whichever of the following conditions is more stringent:

    a. The particulate emission rate shall not exceed 21.1 lbs/hr; or

    b. The particulate emissions shall be limited to 0.031 gr/dscf as specified in the U. S. Environmental Protection Agency's Standards of Performance for Coal Preparation Plants.

In addition the applicant shall not cause to be discharged into the atmosphere from the thermal dryer, gases which exhibit 20 percent opacity or greater.

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19. The applicant shall not cause to be discharged into the atmosphere from any coal processing or conveying equipment, coal storage system, or coal transfer and loading system, gases which exhibit 10% opacity or greater and particulate emission limit greater than 0.01 gr/dscf.

   a. The sulfur dioxide rate from the coal dryer shall not exceed the more stringent of 60 lbs/ton of coal burned or 180 lbs/hr. The applicant shall conduct testing in order to measure the sulfur dioxide emission rate from the coal dryer. The test methods and procedures must be approved by the Mobile County Health Department.

20. With regard to the coal dryer, the applicant shall continuously operate monitoring devices for measurement of the temperature of the gas stream at the exit of the coal dryer on a continuous basis; also, the monitoring devices are to be recalibrated annually in accordance with procedures under 40 CFR 60.13(b)(3).

21. With regard to the raw mills and kilns (and the clinker cooler if alternative number 1 is utilized), they will meet a particulate emission limit of the more stringent of 93 lbs/hr or of 0.30 lb/ton of feed (dry basis) to kiln as specified by Ideal Cement in its permit application to the Mobile County Health Department. The 0.30 lb/ton of feed is equal to the U. S. Environmental Protection Agency's Standard of Performance. In addition, the applicant shall not cause to be discharged into the atmosphere through the raw mill stack, any gases which exhibit greater than 20 percent opacity.

   a. The sulfur dioxide emission rate from the raw mills, kilns and clay dryer (and clinker cooler if alternative number 1 is utilized) through the raw mill stack shall not exceed the more stringent of 40 lbs/ton of coal burned or 2,160 lbs/hr. Within 180 days after initial operation of the facility, or 90 days after the facility is operating at full capacity, testing will be conducted on several occasions to determine the sulfur dioxide emission rate through the raw mill stack. (The test methods and procedures must be approved by the Mobile County Health Department.) The Department may then make reasonable reductions in the above emission rate based upon the results of this testing and the variations in such results and the possibility of variations in the future; the feasibility, cost and engineering aspects of complying with such reductions, if any are proposed; and the process, fuel or raw material changes necessary to comply with such reductions, if any are proposed.

22. With regard to the clinker cooler (if alternative number 2 is utilized), it will meet a particulate emission limit of the more stringent of 31 lbs/hr or of 0.10 lb/ton of feed (dry basis) to kiln as specified by Ideal Cement in its permit application to the Mobile County Health Department. The 0.10 lb/ton of feed is equal to the U. S. Environmental Protection Agency's Standard of Performance. In addition, the applicant shall not cause to be discharged into the atmosphere from the clinker cooler any gases which exhibit 10 percent opacity, or greater.

23. With regard to the clay dryer, it will meet a particulate emission limit of the more stringent of 4.30 lbs/hr or 0.01 gr/dscf as specified by Ideal Cement in its permit application to the Mobile County Health Department. The emission limit is in addition to the U. S. Environmental Protection Agency's Standard of Performance (10% opacity).

24. Fabric filters used to control fugitive dust on all other emission points not mentioned in the previous conditions shall meet a particulate emission limit of 0.01 gr/dscf as measured by EPA approved test methods and shall not cause to be discharged to the atmosphere, gases which exhibit 10% opacity or greater.

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25. Due to the large number of point sources, source tests will be required on sources that both EPA and Mobile County Health Department in consulatation with the applicant feel are representative of the fabric filters used at the plant.

26. The applicant must mail to the Mobile County Health Department and EPA, within five working days after selection, and before purchase, copies of technical data pertaining to the selected control devices including formal bid from the vendor, guaranteed efficiency or emission rate, and all design parameters. A list of any additional required information will be sent to the applicant upon receipt of this submittal. Although the type of control devices which are described in general in the application have been determined by EPA to be adequate, The Mobile County Health Department must review the final selected device in order to verify the emission limits stated in the application. The Mobile County Health Department may, upon review of these data, disapprove the application if the Mobile County Health Department determines the selected control devices to be inadequate to meet the emission limits specified in the conditional approval.

27. Beginning one month after final conditional construction approval from EPA and ending when submittals required under Condition 26 have been evaluated and approved by the Mobile County Health Department applicant shall submit to the Mobile County Health Department a quarterly status report briefly outlining progress made on engineering design and purchase of major pieces of equipment, including control equipment.

28. The applicant will be required to operate and maintain continuous in-stack opacity monitors on the raw mill stack (Emission Points No. 45 and 46) and on the clinker cooler stacks (Emission Points No. 47 and 48) if alternative Number 2 is utilized. The instrument and reporting format must be approved by the Mobile County Health Department.

29. The total sulfur content in the coal will be measured and a monthly report of the content will be required. The method of analysis for sulfur and reporting format must be approved by the Mobile County Health Department.

30. Testing for particulate matter must be conducted on Emission Points 45, 46, 47 and 48. The test methods and procedures must be approved by the Mobile County Health Department.

31. Testing for sulfur dioxide must be conducted on Emission Points 45 and 46. The test methods and procedures must be approved by the Mobile County Health Department.

32. The applicant will be required to operate and maintain continuous in-stack sulfur dioxide monitors on the raw mill stack (Emission Points No. 45 and 46). The instrument and reporting format must be approved by the Mobile County Health Department.

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# ALABAMA HISTORICAL COMMISSION (PLANT SITE)

STATE OF ALABAMA
ALABAMA HISTORICAL COMMISSION
725 MONROE STREET
MONTGOMERY, ALABAMA 36104

W. WARNER FLOYD
EXECUTIVE DIRECTOR

TELEPHONE NUMBER
832-6621

August 29, 1977

Ms. Marcia L. Ward
Environmental Planner
Environmental Science and Engineering, Inc.
P. O. Box 1354 University Station
Gainesville, Florida 32604

Re: Proposed Cement Plant
Theodore Industrial Park
Monroe County

Dear Ms. Ward:

Based on the assessment conducted by Archaeologists Noel R. Stowe and Dan L. Jenkins, the Alabama Historical Commission, state historic preservation office, concludes that the cement plant site, Theodore Industrial Park, Monroe County, will have no adverse affect on any cultural resources included in or eligible for the National Register of Historic Places.

Sincerely,

W. Warner Floyd
W. Warner Floyd

WWF/gcb

xc: Archaeologist Noel R. Stowe

Milo B. Howard, Jr.
Milo B. Howard, Jr.
State Historic Preservation Officer

p-51-a

## ALABAMA HISTORICAL COMMISSION (QUARRY SITE)

STATE OF ALABAMA
ALABAMA HISTORICAL COMMISSION
725 MONROE STREET
MONTGOMERY, ALABAMA 36104

W. WARNER FLOYD
EXECUTIVE DIRECTOR

TELEPHONE NUMBER
832-6621

April 19, 1978

Ms. Marcia L. Ward
Environmental Planner
Environmental Science and Engineering, Inc.
P. O. Box 13454
Gainesville, Florida 32604

Re: Archaeological Investigations
at the Ideal Basic Industries,
Inc., Perdue Hill Quarry Site
Monroe County

Dear Ms. Ward:

Based on the archaeological investigations conducted by Archaeologist Noel R. Stowe, the Alabama Historical Commission, state historic preservation office, concurs in the development of Ideal Basic Industries, Inc. plant site at Perdue Hill. However, if during construction or mining activities artifacts are discovered please notify the Commission immediately.

Sincerely,

W. Warner Floyd
W. Warner Floyd

GCB

# ALABAMA STATE DOCKS DEPARTMENT APPROVALS (PLANT SITE)

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**ALABAMA STATE DOCKS DEPARTMENT** AN AGENCY OF THE STATE OF ALABAMA
TWX 810 741-7748
P.O.BOX 1588
MOBILE,ALABAMA 36601

March 15, 1978

Ideal Basic Industries
Cement Division
P. O. Box 8789
Denver, Colorado 80201

Attention: Mr. G. M. Lochhead, P. E.
Chief Engineer

Gentlemen:

You are hereby licensed to perform dredging, removing approximately 650,000 cubic yards of material, on the Theodore Industrial Canal, near Mobile, Mobile County, Alabama, in a manner and at the location as described in your application dated March 3, 1978, and the drawings attached thereto.

This license merely concerns the public's rights of navigation and has no connection with property rights.

This license is issued subject to the approval of the U. S. Corps of Engineers, and no work in connection with this project is to be performed prior to the issuance of a permit by the Corps of Engineers.

Also, this license is issued subject to the approval of the Alabama Water Improvement Commission, Alabama Department of Conservation & Natural Resources, and Environmental Protection Agency.

For the Director:

W. H. Black, Jr.
Chief Administrative
Officer

WHB/mh

cc; Corps of Engineers

ENGINEERING DEPT.
[illegible]
CEMENT COMPANY

**ALABAMA STATE DOCKS DEPARTMENT** AN AGENCY OF THE STATE OF ALABAMA
TWX 810 741-7748
P.O.BOX 1588
MOBILE,ALABAMA 36601

March 15, 1978

Ideal Basic Industries
Cement Division
P. O. Box 8789
Denver, Colorado 80201

Attention: Mr. G. M. Lochhead, P. E.
Chief Engineer

Gentlemen:

You are hereby licensed to construct access road bridge and railroad spur bridge, discharge outlet, discharge catchment area, and fill in wet land, in North Fork Deer River, near Mobile, Mobile County, Alabama, in a manner and at the location as described in your application dated March 3, 1978, and the drawings attached thereto.

This license merely concerns the public's rights of navigation and has no connection with property rights.

This license is issued subject to the approval of the U. S. Corps of Engineers, and no work in connection with this project is to be performed prior to the issuance of a permit by the Corps of Engineers.

For the Director:

W. H. Black, Jr.
Chief Administrative
Officer

[illegible]

cc: Corps of Engineers

ENGINEERING DEPT.
MAR 21 1978
IDEAL CEMENT COMPANY

# ALABAMA STATE DOCKS DEPARTMENT APPROVALS (QUARRY SITE)

**ALABAMA STATE DOCKS DEPARTMENT** AN AGENCY OF THE STATE OF ALABAMA
TWX 810 741-7748
P.O.BOX 1588
MOBILE,ALABAMA 36601

March 15, 1978

Ideal Basic Industries
Cement Division
P. O. Box 8789
Denver, Colorado 80201

Attention: Mr. G. M. Lochhead, P. E.
Chief Engineer

Gentlemen:

You are hereby licensed to construct a dock facility on the Alabama River, near Perdue Hill, Monroe County, Alabama, in a manner and at the location as described in your application dated March 3, 1978, and the drawings attached thereto.

This license merely concerns the public's rights of navigation and has no connection with property rights.

This license is issued subject to the approval of the U. S. Corps of Engineers, and no work in connection with this project is to be performed prior to the issuance of a permit by the Corps of Engineers.

For the Director:

W. H. Black, Jr.
Chief Administrative
Officer

WHB/mh

cc: Corps of Engineers

ENGINEERING DEPT.
MAR 21 1978
EMENT COMPANY

**ALABAMA STATE DOCKS DEPARTMENT** AN AGENCY OF THE STATE OF ALABAMA
TWX 810 741-7748
P.O.BOX 1588
MOBILE,ALABAMA 36601

March 15, 1978

Ideal Basic Industries
Cement Division
P. O. Box 8789
Denver, Colorado 80201

Attention: Mr. G. M. Lochhead, P. E.
Chief Engineer

Gentlemen:

You are hereby licensed to form clarification basins on the Alabama River, near Perdue Hill, Monroe County, Alabama, in a manner and at the location as described in your application dated March 3, 1978, and the drawings attached thereto.

This license merely concerns the public's rights of navigation and has no connection with property rights.

This license is issued subject to the approval of the U. S. Corps of Engineers, and no work in connection with this project is to be performed prior to the issuance of a permit by the Corps of Engineers.

For the Director:

W. H. Black, Jr.
Chief Administrative
Officer

WHB/mh

cc: Corps of Engineers

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